

DEC 14 1922

Railway Age

SECOND HALF OF 1922—No. 24

NEW YORK—DECEMBER 9, 1922—CHICAGO

SIXTY-SEVENTH YEAR

Published Weekly by Simmons-Boardman Pub. Co., Woolworth Bldg., New York, N. Y. Subscription Price U. S., Canada and Mexico, \$6.00; foreign countries (excepting daily editions), \$8.00, and \$10.00 a year including all dailies; single copies, 25c. Entered as second-class matter January 30, 1918, at the post office at New York, N. Y., under the act of March 3, 1879.



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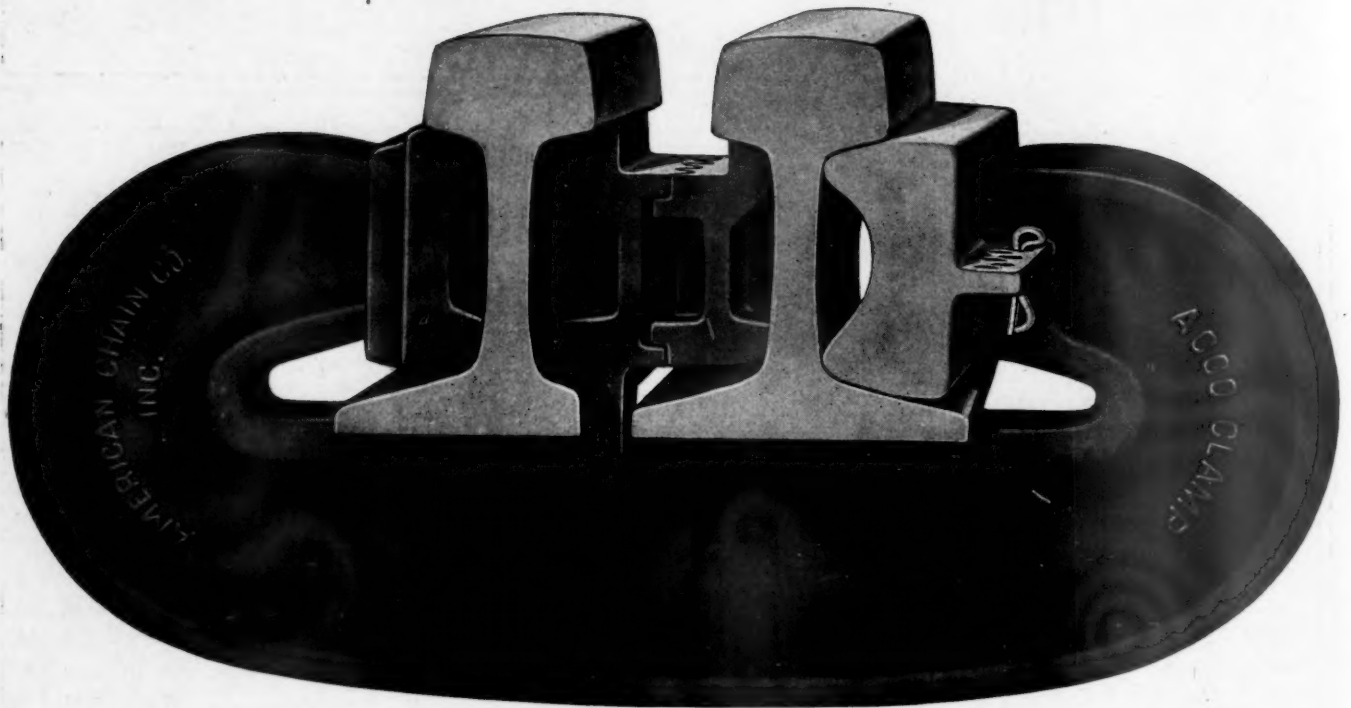
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EDITORIAL

Railway Age

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When the collapse of several docks in San Francisco Bay a few years ago revealed the presence of marine borers in

Marine Borers Invade Atlantic Harbors

large numbers in the timber substructures, the railways and other owners of water-front property became much concerned over this new danger. At first the activities of these insects were believed to be confined to the Pacific coast, but it is now evident that they have also become active in the harbors along the Atlantic coast. The investigation which the National Research Council is now making shows that they are to be found as far north as Provincetown, Mass., and south to the Gulf of Mexico. This new danger is of live interest to the railways reaching these ports because of the large investment which they have in piers and other water-front structures. The situation is one which demands prompt attention if the inroads of these insects are to be arrested. While extensive scientific investigation must be made to determine means of overcoming their attacks, the destruction they bring about is so rapid that these investigations must be conducted with the utmost speed. The railways which have property in danger from this source should, therefore, give their full support, financially and otherwise, to this investigation before the damage becomes increasingly serious.

The way to get rid of the delays to trains incident to requiring conductors' signatures to dispatchers' orders is to introduce the general use of Form 19 instead of Form 31. The way to

Use Train-Order Form 19

introduce it is to use it. An executive order of two sentences, with the proper signature, is enough to start an important progressive movement. This simple truth is known to all well-informed operating officers (and, in some cases, so well known that the knowledge has led to action), yet many, who seem convinced, apparently fear to make the change. Any manager who thinks that possibly the abolition of signatures might increase the risk of collision by a millionth of one per cent ought to re-read the convincing arguments in favor of Form 19, which have been repeatedly published, and then see if he cannot get some neighboring road to join him in accepting and acting on those arguments. If the legal department of your road must be educated before its assent can be secured, the plan of educating two or more legal departments simultaneously may help to overcome inertia. We suggest this neighborhood arrangement because anything like country-wide co-operation seems to be out of the question, at least for the present. One progressive manager who appealed to the Train Rules Committee of the American Railway Association to take action received the reply that the Standard Code rules already allow any road to use Form 19 as freely as it pleases; and the committee dropped the subject. We are not sure but the characteristic conservatism of the A. R. A. is, in this instance, harmless. This reply is a direct challenge. It may be a good thing for railroad managers to loosen up a trifle in their hide-bound worship of precedent, and get out of the habit of hiding behind a big and frigid organization. One leading road, the Southern Pacific, is to extend the use of Form 19 on January 1 throughout its thousands of miles of lines, as noted in the

Railway Age last week, page 1032. There is ample time for any number of other roads to join in the same movement. Why not make this change on your road on the same day?

A communication from an engineman in the employ of the Great Northern Railway of England was recently published by our British contemporary, the *Railway Gazette*, telling of the "locomotive improvement" classes provided by his railway. The writer tells of a particularly interesting lecture which was

Genuine Employee Interest

given recently at one of these classes. The subject was the valve gear of a three-cylinder locomotive and the lecture was illustrated by a working model. The correspondent says that the lecture room was packed with all classes of enginemen and engine-house employees, "from the chief to the call boy." The audience, he continues, took an active interest in the lecture and plied the speaker with pertinent questions. The correspondent concludes by emphasizing the great change which has come over the employees in their increased interest in their work and their desire to perfect themselves in it. The *Railway Age* has already called attention to the classes in railway economics, operation, law and kindred subjects which have been organized by the British railways and which are attended by hundreds of earnest students—all of them employees of the railways. We have also noted how railway officers and employees are meeting together in committees and councils, not only to settle disagreements, but to take counsel with each other on means and methods of improving the efficiency of the railways. Moreover we have the word of a leading English technical journal to the effect that the harmonious relationship with labor is the most encouraging feature of the British railway situation. Surely American railway officers and employees can learn much about mutually advantageous co-operation from England's example!

A road that proposes to undertake an investigation of the possibility of increasing the capacity of a line should collect

Making a Track Capacity Study

the required information with care. If the signal engineer is a close student he should lead the investigation. With the assistance of the engineering department, the large field maps can be reduced to simplified straight line track diagrams on a scale of about one to 1,000, with the grades and curvature indicated by auxiliary lines and with all passing tracks, water tanks, coal chutes, station platforms and train order signals indicated. He should then make a trip over the territory on a motor car to locate on his map numerous local conditions affecting operation, so that these features may be in mind during the studies to follow. He may then well proceed to the dispatcher's office, where he can prepare "time-distance" charts in consultation with the chief dispatcher, covering all train movements for various 24-hour periods of normal and heavy traffic, as taken from the train sheets. A study of these charts will show how trains are spaced and the time that the track is occupied by certain movements. With a

knowledge of the estimated traffic to prepare for, the signal engineer, with the aid of the chief train dispatcher or the superintendent, is now in a position to prepare prospective "time-distance" charts, in which are incorporated the additional train movements that will be permitted by signal protection. With the proper co-operation of the operating and mechanical officers in the study of such charts, relatively accurate conclusions can be drawn regarding the possibilities of expediting the movement of traffic by a signal system. In view of this fact and considering the small incidental expense involved, it would seem advisable for numerous roads to institute such investigations on their busiest single-track divisions that are now giving trouble from apparent lack of track capacity.

In the days when James J. Hill was developing the heavy train load there were many experienced railway men who shook their heads and said that while such a method might work out satisfactorily on the Great Northern, it would not meet the peculiar conditions which existed on their roads. However, the

"Main Tracker" Here to Stay

Hill idea has prevailed and one road after another has come to realize its economies until today its merit is generally conceded. The point may be raised whether we are not now facing a similar situation with reference to the making up of trains for movement intact through intermediate terminals to remote destinations. A few roads have followed this practice for years, others have adopted it more recently and there are still many roads who feel that this plan is not practical for their conditions. A few weeks ago when the traffic was at its peak, the capacity of the roads was determined largely by the number of cars which could be classified and dispatched through the terminals. Every train that was kept out of a terminal added, therefore, to the capacity of the roads. The peak of traffic has passed, but capacity is still of prime importance, since many roads are still being offered more business than they can handle. However, there are other advantages of the "main tracker" of equal or even greater value. Foremost among these advantages is the reduction in operating costs. One large railway which has pioneered in this direction estimates that it is saving three-quarters of a million dollars monthly by this plan, considering only those costs which can be allocated directly, such as labor and fuel. Another railway which inaugurated an intensive campaign in this direction about a year and a half ago has been able to effect a reduction of between 50 and 60 eight-hour switch engine tricks daily. This road has also been able to reduce the number of men employed to inspect and repair cars because of the reduced amount of switching. Surely, such economies as these warrant the closest investigation in times of heavy traffic or of light traffic. The "main tracker" idea has been developed on a sufficient number of roads to demonstrate the soundness of the principle. The question on those roads which have not yet taken it up is not whether it is practicable or not, but rather whether when it will be adapted to the local problems of these particular roads.

The petition filed with the Public Service Commission of Oregon asking the Interstate Commerce Commission to order

How to Get New Railroads Built

some one or more of the railroads serving that State to construct a considerable amount of new railroad mileage in eastern, central and southern Oregon, as reported in last week's issue, is interesting as the first important case in which the provisions of the Transportation Act authorizing the commission to require the building of new railroad facilities

have been invoked. It is also a most significant illustration of the fact that there are parts of the country where the public wants new railroads which the existing railroad companies have not built voluntarily. The war and the period of business depression which followed it undoubtedly account for some of the lack of railroad extension and expansion in the last few years, but the Oregon commission's petition says that there exist practical and feasible routes for the extensions which it asks that the railroads be compelled to make and that in some instances construction was actually begun many years since, but never completed. If this is the case, it must have been because the projectors of the railroads were unable to demonstrate to those who had capital to invest that the railroads proposed would be profitable enterprises. One of the reasons which has caused doubt as to the prospective profitability of a railroad enterprise has been the kind of regulation which has been applied to existing railroads, and one of the surest ways of bringing about an increase in railroad facilities would be a policy of regulation which would hold forth a prospect of profitable operation. These remarks are not made particularly for the benefit of the Oregon commission, which was one of the comparatively few State commissions that offered no objections to the putting into effect of the increased rates authorized by the Interstate Commerce Commission in 1920, and which may be willing to accord to the new railroads it wants some excuse for being from the viewpoint of others besides those who desire the service. The Transportation Act, which gives the Interstate Commerce Commission power to order new extensions, also expresses a policy intended to appeal to those who must furnish the necessary capital and it also attempts to encourage new construction by providing that a new railroad may retain any "excess" earnings without recapture for 10 years. We are told that the revenue provisions of the act have not yet been able to work as intended, because of the abnormal conditions that have prevailed. If more normal conditions make it possible for the railroads to reach the standard set by Section 15-a of the act, it may be that Oregon can get new lines built without the need for invoking Paragraph 21 of Section 1.

It is as an index of what may be expected from the year's operations as a whole that the monthly reports of railway

Monthly and Annual Reports

revenues and expenses find their greatest—although, of course, by no means their only—value. As an index of what the year's earnings may prove to be the monthly earnings' statements have their leading value because they are available in from three to four weeks after the close of the month which they cover. Proper use of the figure for the month and for the cumulative period supplies a readily available measure of the year's results available promptly and increasing in accuracy and in value in proportion to the proportion of the year which the cumulative period includes. It is common sense to say that a railway's report for a particular month or for a particular cumulative period must be used with proper regard to the railway's own peculiar conditions. Thus, for a road like the Atlantic Coast Line which normally shows its best months in the earlier part of the year when the perishable freight is moving, an entirely different set of conditions is presented as compared with those of the Great Northern which makes the better of its net when the iron ore and wheat are moving in the latter half of the year. Realizing the value, with due regard to the road's characteristics and underlying conditions generally, of the monthly statement as an indication of what the year as a whole may show, it would be natural for us to expect that every care would be taken to show a proper relationship between the figures given in the monthly statements and those which ultimately appear in

the annual report itself. This, unfortunately, seldom proves to work out in actual practice, and the reasons that it does not work out are several. The first is that only a comparatively few roads show in their annual reports that important figure in the monthly report—namely, net railway operating income. Another reason is that frequently the annual report covers a different mileage—because possibly of the inclusion of subsidiary lines—from the monthly report. Third, there are almost always corrections which cause the annual report to show different figures from those which appear, let us say, in the December cumulative statement. And we might go on. Taking the situation by and large, however, it seems evident enough that this is a matter which should be given greater attention than has thus far been given to it. Under present conditions there is much confusion about the figures that should be entirely unnecessary.

With the car and locomotive orders for the first eleven months of the year placed, we are now in a position to make a pretty fair estimate as to how 1922 as a whole will rank with other years from the standpoint of equipment purchases. Up to and including last week's issue, the *Railway Age* had reported in its equipment and supplies column, orders placed for 2,175 locomotives, 139,257 freight cars and 1,706 passenger cars for use on the railways in the United States. These figures break no records but, on the whole, they compare very favorably indeed with the totals for recent years, as is shown in the following table:

DOMESTIC ORDERS			
Year	Locomotives	Freight Cars	Passenger Cars
1915	1,612	109,793	3,101
1916	2,910	170,054	2,544
1917	2,704	79,367	1,124
1918	2,593	114,113	109
1919	214	22,062	292
1920	1,998	84,207	1,781
1921	239	23,346	246
1922 (11 mos.)	2,175	139,257	1,706

In this table the striking feature is the comparison with 1921 and the fact that the 1922 eleven months' total for freight cars is the best in the period given with one exception, 1916, when orders for 170,054 cars were reported. Orders in November this year totaled 319 locomotives; 13,599 freight cars, and 153 passenger cars. The November figures and the cumulative totals are shown as follows:

DOMESTIC CAR AND LOCOMOTIVE ORDER IN 1922			
Month	Locomotives	Freight Cars	Passenger Cars
Jan.	5	7,960	235
Feb.	8	14,721	160
March	76	5,550	25
April	272	30,507	540
May	99	18,337	235
June	22	11,097	37
July	353	15,675	120
Aug.	220	576	22
Sept.	617	6,737	63
Oct.	184	14,498	116
Nov.	319	13,599	153
Total (11 mos.)	2,175	139,257	1,706

The orders in 1922 are apparently going to hold up well to the end of the year. The November totals were good. The more important fact is that in the equipment and supplies column this week there are reported 3,000 tank cars placed by the Union Tank Line, which 3,000 are not included in the November figures already quoted. The Southern Pacific has arranged to secure some 7,000 cars, inquiries for 5,000 of which are already issued. Inquiries have also been sent out for 5,000 refrigerator cars for the Pacific Fruit Express and it is understood that bids will shortly be asked for 300 additional refrigerator cars for passenger train service. This means that the 1922 eleven months' total is likely to be substantially increased before the year is out.

The Truth About the Transportation Act

RADICAL POLITICIANS and labor leaders will, within the next few months, make an energetic drive to secure the repeal of the Transportation Act, or at least of those provisions of it against which they have constantly carried on propaganda during the last two and a half years. They will make this drive upon the assumption that the Transportation Act is beneficial to the railways. They and many other people seem to reason that anything which benefits the railways must harm labor and the public.

The *Railway Age* advocated the Transportation Act. We still believe that if its provisions had been in the past, and should be in the future, carried out in the spirit in which they were enacted it would do more good and less harm than any other railroad legislation ever enacted in this country. In our opinion, however, the Transportation Act thus far has done the railroads at least as much harm as good, and it is doubtful if they should very strongly oppose its repeal.

The most important provisions of the Act are those relating to rate making, to labor controversies and to consolidations.

The rate making provisions directed the Interstate Commerce Commission to so fix rates that the railways would be able to earn a fair return upon their valuation, giving due consideration to the transportation needs of the country. It directed the Commission to take as a measure of a fair return for the two years ending with March 1, 1922, not less than 5½ per cent. The Commission ruled in the 1920 rate case that a fair return at that time would be 6 per cent, and in the 1922 reduced rate case that a fair return would be 5¾ per cent. What have the railways actually got? In the year ended March 1, 1921, including the government guarantees for the six months of that year, they had a net return of only 3½ per cent. In the year ended March 1, 1922, they had a net return of 3.65 per cent. The average for the two years was 3.57 per cent. For the entire two years, it was \$918,000,000 less than a return of 6 per cent on their valuation, and \$730,000,000 less than a return of 5½ per cent.

Thus the Commission, in fixing the rates, completely failed to carry out the instructions and intent of the law with respect to these two years. Its failure was mainly due to the depression of business, but it failed in spite of the fact that the railways, during those two years, received \$730,000,000 less than the minimum return mentioned by the law, the Commission, immediately after the termination of these two years, yielded to public clamor and made a general reduction of freight rates, and during the seven months ending with last September the net return earned was less than 4 per cent, and in August and September averaged only 2¾ per cent. The net returns which the railways have received in the thirty-one months since the Transportation Act went into effect for which we have complete figures has been \$1,146,000,000 less than 6 per cent and \$844,000,000 less than 5½ per cent, and has been in fact the smallest return they ever have received in any equal period since statistics for the railways as a whole have been kept.

In other words, the Transportation Act as administered by the Commission, has thus far failed to enable the railways to earn anything approaching a "fair return." It is inconceivable that even if the Act had never been passed, regulation would have or could have restricted them to a lower return than they actually have received under it. But while the rate making provisions thus far have done the railways no good, they have, in one respect, done them much harm. They have afforded pretext for the wide-spread dissemination of propaganda to the effect that the railways are "guaranteed" a return of 5½ or 6 per cent; and this propaganda has done much to create sentiment hostile to the roads.

The rate making provisions further provide that any rail-

way which earns more than 6 per cent on its valuation must hand one-half of its net return in excess of this amount over to the Interstate Commerce Commission. This provision manifestly was predicated upon the assumption that the provision assuring to the railways an opportunity to earn a "fair return" would be carried out. But while the railways as a whole have not earned anywhere near the returns specified in the law and expected by them the Commission, in conformity with the law, is taking steps to collect this "excess" net return of the more prosperous railways.

The results of the passage of the rate making provisions are, then, that the railways never have earned anywhere near a "fair return"; that the provisions have been made the pretext for damaging propaganda against them; and that some railways must surrender a part of their net return which they could have kept if the Transportation Act had not been passed. Plainly, the rate making provisions up to this time have done the railways more harm than good.

From the latter part of 1920 until recently other industries secured the benefit of sharp reductions of wages, especially those of unskilled labor. The Transportation Act required all controversies between railways and their employees that might threaten interruption of transportation to be submitted for settlement to the Railroad Labor Board. The second decision rendered effective by the board on May 1, 1920, caused the largest advance in the wages of railway employees ever given to any class of workers. It put the level of railway wages far higher than it was during the war just when the greatest decline of business in history was beginning. The board subsequently awarded reductions of wages, but they were not made until long after extensive reductions had been made in almost every other industry, and even then left railway wages higher than those in other industries.

Thus, during a period of acute business depression the railways, under the Transportation Act, were compelled to pay wages far in excess of what they probably would have paid if the Labor Board had not been created.

The principal purpose for which the Labor Board was created was to prevent strikes. Its creation did not, however, prevent the most extensive and costly railroad strike that ever occurred.

It is easy to see how railway employees have benefited from the passage of the labor provisions. On the other hand, it seems probable that the railways, during the last three years, would have been better off if these provisions had never been enacted.

The consolidation provisions required the Interstate Commerce Commission to frame a plan for the consolidation of the railways into a limited number of competing national systems. The Commission has tentatively adopted a plan many parts of which might be carried out to the advantage of the railways and the public. This plan would, however, work the disruption of the great Hill system, with consequences which would seriously injure the railways composing that system and which would not benefit the public. Furthermore, the provisions of the Act require that when two or more railways are consolidated, the total securities they have outstanding must be adjusted on the basis of their combined valuation, which tends to make the whole consolidation scheme unworkable. If the law merely authorized any consolidation of railways that the Interstate Commerce Commission should hold not contrary to the public interest, it would promote the welfare of both the railways and the public; but it is doubtful if the provisions actually adopted will ever prove to be of any value, and certainly they have not conferred any benefits thus far.

The truth is that the only provision of the Transportation Act which have done the railways any good are those which continued the war-time guarantees during the first six months of private operation, and which resulted in loans being made

to them by the government to carry them through the period of transition from government to private operation.

The Transportation Act on the whole is a good law. Its rate making provisions, from the standpoint of the welfare of both the railways and the public, are the best part of it. But a good law is no better than a bad law if it is not backed by public sentiment and carried out in the spirit in which it was enacted. The principal purpose of those who framed the Transportation Act was to give the country a law which would end the near-confiscation policy of regulation which prevailed for more than ten years before government control of railways was adopted, and so restore the earning capacity of the railways as to enable them to provide sufficient transportation for the country. With the exception, perhaps, of its consolidation provisions, it should be kept on the statute books if it is ever going to be given the effect its authors intended. If, on the other hand, it is to be emasculated by repeal of its only constructive and valuable provisions, or is not to be carried out in future differently from the way it has been in the past, then every syllable of it might as well be wiped out. The railways would be much better off with a more intelligent public sentiment and the much worse laws by which they were regulated prior to 1920 than they are with a public sentiment poisoned against the Transportation Act by propaganda; for as long as this public sentiment exists, it will do the railways far more harm than any law will do them good.

Human Problems in the Mechanical Department

DURING THE PAST five years the relations between the railways and the employees of the mechanical department have undergone a series of profound and sudden changes. Nineteen eighteen saw the first complete unionization of shopmen; 1920 marked the introduction of wage adjustment by arbitration of a governmental agency; 1922 brought the first nation-wide shop strike, resulting in the formation of many company unions. On most roads the strike has nominally been settled, but the problems arising out of the strike and the five eventful years that preceded it are by no means settled. Some roads have made great progress in re-establishing satisfactory relations with their employees; on other roads ill feeling still exists. No individual or road has a monopoly of all the good ideas for correcting the present situation and for that reason mechanical officers should find it distinctly helpful to get together when the Mechanical Division meets next year and discuss frankly and thoroughly the methods that have proved effective in improving relations with the employees.

The scope of this question is so broad that a scattering discussion would arrive nowhere. To make it effective some logical plan must be adopted and the most important topics outlined, preferably in individual papers. The starting point for any discussion of this subject should be the development of foremen. No railroad can regard without alarm a possible recurrence of the situation that existed during the strike, when foremen at many points struck with the men. Above all things, the roads must develop in their foremen a high degree of loyalty. Why did some of these men support the labor organizations instead of the managements, and what can be done to prevent it in the future? Mechanical department officers should work diligently to find the answer to this question.

Many new foremen have been employed since the strike. Giving them a title does not automatically qualify them to interpret the policies of the company and to direct men in a way that will win their support and get the best service they are capable of giving. If any railroad is to operate

successfully, it must have foremen who are more than mere time-servers and more than mere mechanics. These men must be made to understand the vital part they play in the organization and the many-sided character of their work, which requires something of the qualities of the diplomat, the business man and the craftsman. The average foreman does not receive a training that will develop all the necessary qualifications. How can he best be fitted for his responsibility? Surely some methods of training are needed.

One large road has adopted the practice of holding annual meetings of its master mechanics, traveling engineers and foremen in the various branches of the mechanical department. Such meetings may have an important effect in unifying the policy and practice of a road, disseminating information as to improved methods, and building up an esprit de corps. This should be a fruitful topic for discussion, for the problem of training foremen is one that the railroads will always have with them.

The present labor situation is focusing the attention of the mechanical officers again on the human problems which, in recent years, the Mechanical Division has consistently avoided. There is need for a return to the constructive viewpoint which J. F. Deems voiced in his presidential address before the Master Mechanics' Association in 1907: "What shall we leave to aid in solving the problems of the future, many of which may be more perplexing than those we are called upon to solve today? We may work in brass and steel, and leave the most perfect mechanism; we may develop and improve and evolve methods and practices until nothing more can be desired; we may reach perfection in all these, in mechanism, structure and method, and yet our bequest be a failure and itself a burden unless we provide that which is paramount, which is over and above the sum total of all this, and for which even today events throughout the world are crying aloud—the man. A man prepared, experienced, earnest; hopeful and happy; consecrated to his work and ready to the hand of the future."

On Making Friends for the Railways

THE RAILROADS sorely need more friends. The best way to make friends is to show that you take real interest in and are truly anxious to promote the welfare of those that you want for your friends. Many intelligent people are influenced, or even controlled, in forming their opinions regarding matters of importance, such as the railroad problem, by the evidence and arguments presented regarding it. But even they are much more susceptible to conviction by spokesmen for an industry that they believe is treating them as well as it can, than by spokesmen for an industry that they believe cares nothing at all about their welfare; and a large majority of people are influenced much less by reason than by sentiment, and therefore are much more likely to give their friendship and support to persons or concerns that they believe are really interested in their welfare than to persons or concerns that never manifest any interest in it.

One of the principal reasons why it is so easy to create a public sentiment hostile to the railways is that railways make so little effort to show the public that they not only want to make money by serving it, but that they really want to so serve it as best to promote the welfare of the public, and especially of the producers, the shippers and the travelers, in their own territories. The railways have lines and representatives in every territory and community. They are selling about five billion dollars' worth of service annually to the public. For the most part it is good service. It is doubtful, however, if any other industry or concern in the world does relatively as little as the railroads of the United States to convince its patrons that it is rendering them the best service that it can, and trying as hard as it can to so

render the service and fix the charges for it as to promote the interests of its patrons. The problem presented cannot be solved merely by public addresses or advertising, although they are important. It never will be solved until the railways are so managed and organized that their officers and representatives will come in contact with a larger part of the people and until those who do come in contact with the people so treat them as to show them that the railways take a friendly interest in them.

There is a certain large city from which a certain large railway system derives millions of dollars of business annually. The editor of the leading newspaper in that city recently made the statement that he had never had a call from, and never in his life had come in personal contact with, any officer or representative of this railway. Nor is this an exceptional case. There are literally hundreds of chambers of commerce throughout the country. The railway is one of the largest business concerns in every community that it serves. But there are many of these chambers of commerce in whose affairs no railway officer ever participates. There are, in fact, many large towns which are never visited by any railway officer.

But the most neglected class of all are the farmers. Directly and indirectly, the farmers furnish to the railways a large part of their traffic. There are innumerable public meetings of farmers' organizations to which railway officers would be welcome, and in which they would be given opportunity to participate in the discussions regarding matters affecting the welfare of agriculture, including transportation matters. Seldom, indeed, are these meetings attended by anybody authorized to say a word regarding matters in which the farmers and railways are mutually interested. Every year millions of passengers buy tickets at railway ticket offices and stations. Comparatively little effort is made by railways to select, train and supervise ticket agents so that they will always show an intelligent and courteous interest in the problems of the traveler.

Probably if the whole matter were sifted to the bottom it would be found that the principal and fundamental cause of the constant troubles of the railways with the public is that most railways hardly make any real effort to sell themselves, as institutions, and their services to the public in the right way. Salesmanship is an art in the knowledge and practice of which the railways are strangely deficient. Nobody who constantly comes in contact with all classes of people can have any doubt that the average man regards the average railroad as a huge money-making institution which cares little or nothing about the interests and welfare of its customers, employees and the public. The failure of the railroads to get and keep in close human contact with the people leaves wide open the door of opportunity for demagogues and radical labor leaders who see their own interest in misrepresenting the railroads. The demagogues and labor leaders win railway patrons and employees to their support by professing the most intense interest in their welfare; and day in and day out, year in and year out, the misrepresentation of the railroads, not only by politicians and labor leaders, but even by hundreds of thousands of the railways' own employees, goes on unceasingly. The average man who never meets a railway officer or representative of any rank except ticket agents and train employees, who never hears or reads a refutation of any of the misrepresentations of the railways and hears them constantly repeated, but who does come frequently into contact with the many ardent "friends of the people" who live and further their ambitions by attacking the railways, is sure sooner or later to become hostile to the railways and to act accordingly.

It may be asked, how can railway officers do their present work and at the same time participate in the affairs of chambers of commerce, attend meetings of farmers, call upon local business and newspaper men and otherwise come into

contact with the public? If they cannot do these things—and probably they cannot—that fact plainly discloses a very serious weakness in the organization of the railroads. It indicates that the railways are under-officered; and as to most railways, this is undoubtedly true, at least in some departments. When the organization of a business concern is in such a condition that its officers and representatives cannot do the things which obviously must be done to sell the concern, as an institution, and its services to its patrons on the right terms, then very plainly there is something seriously wrong with its organization which should be promptly remedied.

It will cost money to make the changes in the organizations of the railroads necessary to increase and improve the human contact between them and their patrons and employees. It may be necessary to increase the official staffs, not only at headquarters, but on every division. But how much is it annually costing the railways in net return not to make their organizations such as to enable them to establish better relations with the public? Unfair and prejudiced public sentiment expressing itself in corresponding regulation is costing the railroads hundreds of millions of dollars. They are now handling the largest freight business in their history and yet, owing indirectly to unfriendly public sentiment, failing at the rate of a half billion dollars annually to earn a $5\frac{3}{4}$ per cent return. If adequate public relations work carried on in the right way would improve public sentiment, it would be worth literally hundreds of millions of dollars to the railways annually. The cost that would be incurred in doing such work would really not be a net loss even if it were a failure. If it were a failure the final outcome would be the destruction of private ownership and management; but it is only a matter of time until private ownership and management will be destroyed anyway unless a more intelligent and friendly public sentiment can be created and maintained.

Mechanical Conventions and Exhibits

THE VIEWS of a supply man as to the proper relationship between the railroad associations and the organizations which exhibit at their conventions, are set forth in a communication elsewhere in this issue. The writer maintains that holding the June convention at a summer resort creates the impression that the convention and exhibit are holidays rather than business affairs; and that, from the exhibitors' standpoint, an organization of the various mechanical associations, so that the members of all of them could attend a meeting or meetings at various times during a continuous period of two weeks, during which time a single comprehensive exhibit would be maintained, would give the best results.

In considering this matter of the relationship of the associations and exhibitors the fact should not be overlooked that the primary objects of the two groups are not identical. The various railway associations have been organized by groups of officers or supervisors, in most case voluntarily, for the purpose of educating and broadening the members and furthering progress in the various branches of the art of railroading. The exhibits, on the other hand, are one form of sales development work of the companies manufacturing and selling tools, materials or devices to the railroads. They are the organized means of seizing the opportunity presented by the convention for a display of wares before, and personal contact with, a large number of men specifying or using these tools, materials or devices, at one time and place. The relationship between the two groups is fundamentally that which always exists between the prospective buyer and the seller. The seller aggressively seeks the more or less passive prospects and by every means at his command seeks to make it easy for him to see and develop a desire to

buy whatever goods are offered. In this process entertainment is a time-honored means of creating good will and helping to convert passive into active interest.

When and how the conventions of the railroad organizations are to be held is a matter to be settled by their members in the manner which they believe will best further the purposes of the organization. If, from their standpoint, the exhibits possess real educational value or are otherwise of real service to the members as a whole, then the convenience of the exhibitors should not be left entirely out of consideration.

Whatever the action of the railway associations, however, the question as to whether or not exhibits are to be held must be settled finally by the supply companies and the supply companies alone. They must decide whether or not these exhibits are effective sales development agencies. It is doubtful whether a unanimous affirmative could be obtained in answer to this question. The very fact that exhibits continue to be organized, however, indicates that many companies believe that they are effective. But they might be effective and still be less efficient in the use of time and money than other equally effective methods. Some light may be thrown on this question by an analysis of the cost of the Atlantic City convention and exhibits. Including the hotel bills of both railway and supply men, this cost is estimated at about \$1,000,000. In 1922 there were 341 exhibits which were visited by approximately 1,300 railroad men. More than one-half of these men were members of the Mechanical Division and more than one-third were men of lower rank whose principal interest was the exhibit. The remainder were purchasing agents and storekeepers. It is evident then, that had the entire expense been borne by the supply men, the average cost would not have been quite \$3,000 for each exhibitor, in return for which he has the opportunity of imparting some knowledge of, or interest in, his product to 1,300 railroad men. But it may be assumed that probably not more than one-half of these men are interested in any one product or device. If this be true, then the total average cost per prospect reached is a little more than \$4. Part of this is borne by the railroad men whether there is an exhibit or not. But if the entire amount came out of the pockets of the exhibitors, is it conceivable that the same results could be obtained in any other manner without a several times larger unit expenditure?

At the outset the statement was made that the primary end of the associations and exhibitors are not identical. But if the railroad man finds the exhibit a valuable medium of education and a convenient means of shopping, and if to the supply man it is an effective means of sales development at a comparatively small unit cost, it is evident that there is a strong mutual interest between the associations and the exhibitors. It is evident, however, that this is a strictly business interest and the relations between the two parties should be established on a strictly business basis. On such a basis, elaborate entertainment, although it is a natural development of the buyer and seller relationship, is not essential. On a large scale it cannot escape unfavorable comment, which in itself is detrimental to the interests of the railroad association and indirectly at least to the effectiveness of the exhibit.

It is not the purpose here to enter into a discussion of the feasibility of the form of organization of the various mechanical associations suggested by the writer of the letter already referred to. Suffice it to say that the idea of a combined exhibit with consecutive meetings during a continuous period has already been considered and considered favorably by a number of the minor mechanical organizations. The fact must not be overlooked, however, that the primary object of conventions is not the exhibit and that however mutually advantageous the exhibits may be, any association which cannot function without them has little reason to continue its existence.

Letters to the Editor

The Mechanical Conventions— A Supply Man's View

CHICAGO.

TO THE EDITOR:

Your editorials on the defunct 1923 mechanical convention, in the issues of November 11 and November 18, have been read with a great deal of interest. There can be no question but that you have made some very pertinent points in these editorials, but all of the urging which you can put into your pages will not serve to correct a condition which is caused by something deeper than mere lack of interest, which has been increasingly evident in the work of the mechanical conventions during the past few years. There is something basically wrong, and while we are all loath to believe it, we must face the fact that the mechanical conventions, as held at Atlantic City, are not in conformity with the requirements of present day conditions in the field of railway operations. The proof is before us.

You point to the consistent work of the American Railway Engineering Association, in its annual sessions. These sessions have been held in Chicago, and whether or not they were more business-like, they certainly appeared so. When a railroad man visits Chicago from any part of the United States or Canada it is looked on as a business trip, or, in other words, what it purports to be. When a railway officer visits Atlantic City, this is not true. The trip may be one of business or it may be an annual vacation. If it is a business trip and if the railroad employing the officer who makes it sees benefit therein, why should he have to go to the far east coast from San Francisco, St. Paul or Denver? If it is a vacation, why should he be compelled to take it in June, regardless of the requirements of the service on his railroad?

You point to the success of the International Railway Fuel Association and of the Traveling Engineers' Association in their annual conventions, held in Chicago. Why should not the traveling engineers and members of other minor mechanical organizations, such as the general foremen, the tool foremen, the master blacksmiths, the car and locomotive painters, the fuel men, and others, be amalgamated into one good mechanical association, Division V of the American Railway Association, if you please, or an independent organization? Let them meet on different days in a centrally located city, but let those days be consecutive, the committee reports being so arranged that certain classes of men can come to the convention, sit through that part of the discussion in which they are interested and go home. This is now a new thought, but for some reason it has not been expressed with sufficient force to gain a logical negative reply from those who are not in agreement, so far as I have been able to discover.

The railway supply manufacturers' interests cannot be overlooked in this matter. A dozen conventions throughout the year, spread all over the United States, result in unnecessarily large bills, which must be paid by the railroads and finally by the public. There is no question but that the criticism which has resulted in postponement and abandonment of convention after convention at Atlantic City, comes from those who have considered these facts. Why, then, should we obstinately ignore this sentiment and continue to hold our major mechanical conventions in haphazard manner, always at Atlantic City or not at all? Is there anyone who believes a real convention at Atlantic City would be possible without the support of the supply manufacturers

with their exhibits? Had the mechanical association followed the apparently business-like methods of the American Railway Engineering Association, its conventions would have been just as consistently held, year after year.

The railway supply manufacturer who sincerely wishes to exhibit to the railway engineering officers in convention assembled is fortunate indeed, compared with the manufacturer who has wished to effect the same purpose with respect to the mechanical officers. We hear it said everywhere that the railway officers assembled at Atlantic City are confined to a small area throughout the convention, and that, therefore, they will give the exhibits more close attention, there being nothing else to take their spare time, but that if such a convention were held in Chicago the interests would be so diversified that the exhibits would get small attention. The persons who make this statement are paying our railway officers no compliment. The officers who attend the convention for business reasons will consummate their mission. On the other hand, those who go down to the seashore at convention time for a vacation cannot be forced to take any more effective notice of the exhibits by the mere fact that they are imprisoned, so to speak.

In your issue of November 18, D. I. S. Gusted writes pointedly and heatedly on this subject, but he does not get us anywhere except that he adds his voice to the clamor for a convention. By all means let us have a convention. Call it a business meeting, if that sounds better, but let it be a business convention. Encourage the co-operation of the supply manufacturer by furnishing some sort of a guarantee that the attendance will include a representation of all classes of mechanical department officers and he will take chances on their seeing his exhibit whatever may be the other interests of the visitors.

Sentimental inertia dies hard. The writer has seen 13 mechanical association conventions and, compared with the majority in annual attendance, he is low on the seniority list. During these years the exhibit and discussion of a tremendous number of devices has resulted in the improvement of locomotive, car and shop performance, but the space actually demanded for the exhibition of bonafide new devices would not have amounted to more than one-tenth of the space used. The rest was pure waste, not only in space rental, but in the movement of heavy machinery and of locomotive and car parts and devices. Why? Because a few new members were in attendance each year, who might not have seen the exhibits in previous years.

The hand-writing is on the wall. These unnecessary expenditures of time and money must be stopped, but the work must go on. It is true that each annual convention has included a few new faces occasioned by promotion and appointment, but they are not laymen injected suddenly into the railway field. They have been slowly educated and advanced, step by step, to the position of importance which allows of their attendance. Now, if their knowledge of those devices customarily exhibited at conventions is important—and it is—that fact must be recognized and it might as well be recognized early in the individual's service. The difficulty is that he cannot, early in his career, be sent to an Atlantic coast resort with its attendant absence from duty of from 10 to 30 days, its "soup and fish" formality, its \$12 a day hotels. The logical result is an attendance year after year of those who "have arrived" and who, therefore, are not as absorbent of new ideas.

Suppose, then, a mechanical department convention were arranged for a centrally located point to extend over a period of two weeks. Suppose committees were organized to include representation of every phase of mechanical department service, including those minor interests represented at present in six or eight different associations. Suppose these reports were systematically programed to make it unnecessary, except in special cases, for any individual to spend

more than two days in attendance, and yet arranged to bring all reports to the fountain head of the general committees made up of members of the present major associations at the close of the general convention. Is not the benefit to the greater number obvious?

Now, consider the case of the supply manufacturer under such an arrangement. He first would plan on a worth-while exhibit, cheapened in cost by the very location. He has men who must work with the general foremen. He has other men who must deal with the traveling engineers. He has still other men whom he must depend on to meet master mechanics and mechanical superintendents. He has but to consult the program and act accordingly, making each man-day and each expense-dollar count.

The exhibit has a run of two weeks during which, not only all railway officers who at present are numbered as members of many present organizations, but younger men who are being educated to follow, may visit it. The cost is reduced to the minimum per observer. The results will be vastly more satisfactory.

The plan suggested is business-like and should command the support of those who have made the faults of past practices so evident as to effect the abandonment of the convention.

L. F. WILSON.

Vice-President, The Bird-Archer Company.

Combine Train Control With Block Signals

CHICAGO, ILL.

TO THE EDITOR:

Referring to the editorial which appeared on page 874, of the *Railway Age* for November 11, 1922, under the caption "Institute a Signal Investigation," it is generally accepted as a fact that the installation of automatic block signals on busy single track railroads has substantially increased capacity. Indeed, there is little doubt that such installations afford substantial relief from congestion because the blocks are reduced in length, permitting following movements to be made under comparatively close headway and under signal protection.

However, an expenditure of \$4,500 per mile for signal protection only on single track lines seems unwarranted, for the reason that no real physical protection is afforded by such an installation. It is, of course, true that such an installation will give certain signal indications, but even with this there is no absolute assurance that trains will be governed thereby.

After an installation of automatic block signals is completed—be the scheme what it may—there still remains unspanned a gap between the fixed signals and the trains which they are intended to govern, so that while the signaling system may be complete as such, it is incomplete as to protection. As is well known, each signal is connected through the running rails of the track with the train which it is intended to protect—but is this sufficient? Is it not a fact that in reality the danger lies in the train which the signal is intended to stop? With such a signal system there is no assurance that the approaching train will stop and it is under precisely such circumstances that the conditions peculiar to train operation may bring disaster. The cause may be low visibility occasioned by fog, snow or storm, or the occasional lapse of mind of the engineman. Be the cause what it may, such accidents are the most regrettable because they are entirely preventable.

Why should any railroad management desire to spend approximately \$4,500 per mile for signaling when it is possible to secure a signal system and with it complete automatic train control protection for an equivalent amount, with not alone an increase in the capacity of the track but with

such safety as signals alone cannot provide? Why continue to install expensive motor-operated semaphore signals with the necessary complicated electrical and mechanical means for moving a semaphore arm when adequate light signals are available, operated entirely through relay contacts? Why not install a combination of light signals and automatic train control such as will not only give signal indications—the same indications by day as by night—but with such an installation bridge the gap between the signal and the approaching train and thus eliminate the possibility of collisions by striking out from our otherwise splendid railroad system the unnecessary hazard which, under existing operating conditions, is always present in the almost irresistible force of a high-speed train closing in upon another train in its path. It is as practicable to control the approaching train as it is to control an automatic block signal. Assuredly then, the cycle of safe operation should be completed in all future installations by combining such automatic block signals as it is necessary to install, with automatic train control.

The attention of railroad managements should be called to the fact that capacity with safety can only be secured by means of a system of automatic train control consistent in its operation with the indication of fixed signals and with sufficient flexibility to meet any demands of traffic. Further, that numerous unnecessary stops will be eliminated by the installation of such a system and the time lost due to rear flagging will be considerably reduced if not entirely eliminated.

J. BEAUMONT,

Vice-President, Regan Safety Devices Corp.

Need for Diplomatic Apologies

NEW YORK CITY.

TO THE EDITOR:

The letter of William W. Tirrell in your issue of October 28, page 783, is a most searching analysis of the factors in our problem of establishing a good understanding between the railroad owner and the men who work for him; so searching, indeed, that the most superficial reader must see at once that the question is rather abstruse. The only way to get practical results, on the broad lines which are sketched in this letter, would be to establish a night school and to require study, for several weeks, on the half dozen important topics suggested. In other words, we have here the texts for a series of lectures of 40 minutes each—the value of which lectures, however, would depend greatly on who gave them and to what kind of men they were addressed.

Mr. Tirrell, indeed, reminds us that the science of educating a thousand railroad employees in mind, conscience and public spirit, so that they will give ideal service, is a complicated science; and one in which very few of us are proficient. In short, the whole matter is so difficult that it continues to be neglected. But, though we have made little progress in the application of this science, we are not debarred from practicing some of its precepts. Let us make a start in some branch that we already have some knowledge of.

For example: "Each employee must be taught to take a personal interest . . . and to defend his railroad, and *know why* he defends it." Set 25 of your best men a definite task in this direction. Require them to write a 200-word essay. Set them to defend some policy, or practice or condition which can be only partly justified; which in part must be apologized for.

The superintendent of a large division, doing a heavy passenger and freight business, could spend \$200 in no better way than to offer prizes for excellence in this kind of work. Every large railroad has been obliged of late years to do a good deal of apologizing; and most of the conductors and station agents, on whom dependence is placed for maintaining the road's reputation, have very little skill in that kind of work.

B. R. B.

How Can Employee Relations Be Improved?*

A Catechism That Develops Certain Truths Which Must Be
Recognized if Conditions Are to Be Bettered

By Roy V. Wright
Managing Editor, *Railway Age*

Question. What is a railroad for?

Answer. To furnish adequate transportation for freight and passengers—in short, to serve the public.

Question. Who actually performs the detail work in rendering this service?

Answer. The rank-and-file of railroad employees.

Question. How does the public want to be served?

Answer. With courtesy, promptness, certainty and as cheaply as possible.

Question. Are the employees specially trained to serve in this way?

Answer. Apparently not, except in a limited number of cases, and even then often only to a limited degree.

Question. Should this special training apply only to those employees who come in actual contact with the traveling public and the shippers?

Answer. No! Every employee can contribute to more efficient or more economical operation. Sometimes it may be in an obscure place or in a seemingly very indirect way. If the contribution is in more economical operation or in the elimination of waste of some sort resulting in more economical operation—and even without coming in contact with the patrons of the road—it is important because it means that better service can be rendered at the same rates or the rates can be lowered for the same service. On some roads with limited earnings or deficits it may even mean keeping them out of bankruptcy.

Question. Are the employees generally imbued with this spirit of service?

Answer. No.

Question. Give some illustrations to prove this.

Answer. (1) The attitude of indifference, sometimes even bordering on discourtesy, on the part of some ticket sellers, agents, conductors, brakemen, gatemen, porters, waiters, freight house employees, clerks, etc., toward the patrons, particularly if of humble appearance, is one illustration¹—and this in face of the fact that the patrons of the railroad are all cash customers.

(2) Another evidence of the disloyalty toward railroad managements on the part of some employees, is indicated by the unfair and misleading propaganda promoted among many classes of employees through some brotherhood magazines and by so-called labor economists or experts employed by the men. In this respect one quotation in Mr. Brazier's paper is specially significant: "A mule cannot pull while he is kicking, and he cannot kick while he is pulling." What sort of service is being given by employees who are interested in promoting and spreading such propaganda?

* Presented in the discussion of a paper on "The Training of Men to Act in Supervisory Capacities and Best Results in Handling Men," which was read before the meeting of the Central Railway Club on Thursday, November 23, 1922, by F. W. Brazier, assistant to the general superintendent of rolling stock, New York Central Railroad.

¹ This is reflected in the following articles which have appeared in the *Railway Age*: "Do Railways Lack the Selling Sense?" December 2, 1922, page 1039; "A Shipper Comments on Railroad Morale," November 18, 1922, page 929; "Observation of a Transcontinental Traveler," March 11, 1922, page 583.

Question. The above illustrations are only typical and may be multiplied many times over. In the last analysis, whose fault is it that such conditions exist?

Answer. The managements'.

Question. Surely your answer is wrong! It is inconceivable that railroad managements would knowingly allow such conditions to exist if it were in their power to remove them. Can you prove your point?

Answer. There are several reasons for the failure of railroad managements to realize their full duty and responsibilities and discharge them properly. In the first place, it would almost seem—at least in many respects—that they feel the patrons are under a distinct obligation to them when they condescend to sell them transportation and to serve them. Except in a few cases no real salesmanship² ability is shown in dealing with the customers, and no attempt has been made to train even those employees who are engaged in the actual selling processes in the principles of real salesmanship. Moreover, in these days even banks and professional men advertise for business, and yet the railroads with all that they have to sell, spend a mere pittance³ for real advertising.

Question. Would the amount of transportation as a whole be increased by better salesmanship and more real advertising? Does not the amount of railroad transportation sold depend directly on general business prosperity in the same way as does the sale of postage stamps?

Answer. Decidedly no! Passenger traffic,⁴ especially, can be greatly increased by the right sort of salesmanship and advertising. Skillful railroad development departments⁵ have found many ways of developing new business. Salesmanship and advertising⁶ can be made to pay in many direct ways.

Question. Why emphasize direct ways? What other good results will follow?

Answer. Shippers and patrons, often irritated and even angered by indifference and ignorance on the part of railway employees, may be converted into friends,⁷ and surely the railroads need friends today more than they ever needed them before.

Question. What is another reason for your reference to the failure of the railway managements?

Answer. They have failed to take the employees and the public into their confidence as to their problems, finances, etc. This has allowed a degree of mystery to creep into the

² See "Do Railways Lack the Selling Sense?" *Railway Age*, December 2, 1922, page 1039.

³ See "Railroads and Public Relations Advertising," *Railway Age*, November 25, 1922, page 967.

⁴ See "Public Relations Work and Advertising" (Communication), *Railway Age*, April 22, 1922, page 953.

⁵ See annual reports of the meetings of the American Railway Development Association.

⁶ See "On 'Selling' the Railroads," *Railway Age*, February 18, 1922, page 410; "One Big Thing That Is the Matter With the Railroads," *Railway Age*, February 25, 1922, page 457; "Positive Public Relations Work," *Railway Age*, March 18, 1922, page 723.

⁷ See "Why Not Sell the Necessary Service at a Profit?" *Railway Age*, March 4, 1922, page 505; "Public Relations Work," *Railway Age*, March 11, 1922, page 553; "For a Better Understanding Between the Railways and the Public," *Railway Age*, April 22, 1922, page 954; "More About Public Relations Work," *Railway Age*, May 20, 1922, page 1155.

business, particularly since there are persons who have been ready—through ignorance, or for other reasons—to spread misleading propaganda as to the earnings, valuations, etc. Except in a few cases—the Illinois Central⁸ is one notable example—the managements have done little in a large way to remedy this by giving general publicity to the facts.

Question. What do you regard as another failure of railway managements?

Answer. The managements have failed,⁹ as the systems have grown larger and larger and the rank and file has been further and further removed from the chief executives, to give the necessary attention to the selection, training and promotion of employees.¹⁰ Men have often been promoted to the position of foreman purely because of their abilities as craftsmen, or because of their technical knowledge rather than that they understood men, or knew how to direct them. These untrained foremen have frequently irritated and antagonized the men under them when they should have been building up a spirit of loyal co-operation and teamwork among them. Several years are required to train a machinist in the operation of a few simple tools, and yet no special training is given a foreman to fit him to direct the most complicated and highest type of machine in the world—the human being. President Smith of the New York Central is responsible for the statement that “the efficiency of a railroad depends principally upon its men. It is estimated that 95 per cent of railroading is human”—and yet what a lack of appreciation is shown on most roads for taking advantage of the most up-to-date and scientific knowledge concerning the successful handling and direction of human energy.¹¹

A number of large industries have found that it paid well to develop limited but intensive training courses for foremen and other officers, or for prospective foremen. These courses have proved so popular and have been so thoroughly appreciated by both the men and the managements where they have been properly conducted, that it would seem the railroads could well afford to develop similar courses of training for their foremen.

Another splendid way of inspiring and training foremen and officers is through the conventions or meetings of their various associations. While these organizations are largely technical, fortunately a few of them have recognized that the human problem was, after all, one of the most important problems which confronted them and have talked the question over frankly both in their open meetings and among themselves outside of the regular sessions. These conventions and meetings act as clearing houses for the best practices and thoughts and should be encouraged.

It is unfortunate that the Mechanical Division, A. R. A., the parent organization in the mechanical department, has failed to recognize this and has limited its committee investigations and the convention proceedings largely to questions relating to equipment standards. It is to be hoped that the mere fact that there has been little time for the preparation of committee reports during recent months will automatically force the consideration at the 1923 meeting of questions relating to employees' relations, through the presentation of individual papers or reports by men who are specially quali-

fied to consider the various aspects of the personnel question.

Question. In what other way have the managements failed?

Answer. In realizing that autocracy must be replaced by a spirit of democracy.¹²

Question. Hold on a minute, you say. This is no place to preach radicalism, socialism or communism. You had better stop where you are.

Answer. The above statement might have been challenged successfully 10 or 20 years ago, but times have been changing rapidly for the better. No one would accuse the Pennsylvania Railroad¹³ of being radical; its position has usually been considered quite conservative. That road has summarized its present policy and practice in its relation with its employees in this sentence: “To give all employees an opportunity to have a voice in the management in all matters affecting their wages, working conditions and welfare; and in other matters of mutual concern affecting the welfare of the company and of the public which the company serves.”

Question. Are you going to take things out of the hands of the management? What will become of discipline?

Answer. No. The employees can participate in the above mentioned matters and yet it will be possible to preserve the strictest sort of discipline. It is, of course, necessary to have thoroughly understood just what are the rights and responsibilities of the management and just what are the rights and responsibilities of the employees.

Question. Is this in any way related to the training of men to act in supervisory capacities?

Answer. If the representatives of the employees gather around the table with the representatives of the management to discuss matters relating to wages, working conditions and welfare, both sides will come to understand each other much better. Moreover, the bringing up of grievances and the receiving of constructive suggestions from the men should automatically locate weak spots in the organization and foremen and officers who do not understand how to deal with men properly. Efforts can then be concentrated upon these men to coach and train them to deal with the men in the right way. In most cases an immediate improvement will be noted. In some cases where the men are unfitted for the handling of men they can be transferred to positions which do not require their coming in contact with the men in a supervisory capacity.

Question. This matter of employee representation looks good and the scheme seems logical, but is not something else needed to insure its success?

Answer. Yes. It will fail unless it is dominated by justice and the spirit of a square deal.

Question. You fail to use the expression “Golden Rule,” which is so much in vogue. Did you do this intentionally?

Answer. Yes.

Question. Why?

Answer. The term “Golden Rule,” rightly interpreted, is far more satisfactory than the expression we have used, but it has been applied so thoughtlessly and carelessly that it is to be feared it has lost its real force and meaning to many of those who use it. Obviously, if we are to solve the human relations problem on the railroads, thus insuring the most efficient and economical transportation and the best service to the public, we must inject a real spirit of brotherhood into

⁸ See “Public Relations Work on the Illinois Central,” *Railway Age*, October 8, 1921, pages 654 and 683.

⁹ See “Developing Machinery and Neglecting Men,” *Railway Age*, September 16, 1922, page 495.

¹⁰ See “Getting Better Results From Railroad Organizations,” *Railway Age*, February 25, 1921, page 459; “Benefits Derived From Apprentice Training,” *Railway Age*, March 18, 1921, page 714; “Training and Developing the Railroad Worker,” *Railway Age*, March 18, 1921, page 719; “Management Problems and the Human Element,” *Railway Age*, June 10, 1921, page 1309 and August 20, 1921, page 325.

¹¹ “A Personnel Department For the Railways,” *Railway Age*, June 18, 1920, page 1921; “Importance of the Human Element in Railroading,” *Railway Age*, October 22, 1920, page 691; “Labor Turnover—Not a Disease But a Symptom,” *Railway Age*, December 31, 1920, page 1157; “The Functions of a Railway Employment Service,” *Railway Age*, February 4, 1921, page 329; “Job Analysis and Job Specification,” *Railway Age*, September 3, 1921, page 445; “Our Road,” *Railway Age*, September, 23, 1922, page 549.

¹² See “The Human Problems of Modern Industry,” *Railway Age*, November 25, 1922, page 977.

¹³ See “Employee Representation on the Pennsylvania,” *Railway Age*, October 14, 1922, pages 682 and 691 and November 11, 1922, pages 874 and 876.

the railroad organizations. In other words, the Golden Rule must be applied in its best and strongest sense.

Question. This sounds Utopian and possibly borders a bit too closely on the religious. Why try to put something into the transportation industry that commercial and industrial interests do not recognize?

Answer. Hold up! You are going too fast. Not a few industries and at least one large Chamber of Commerce have come out clearly and forcefully for a more widespread recognition of the Golden Rule in the business world.

Consider the Philadelphia Chamber of Commerce, for instance. That body appointed an industrial relations committee to look into the question of industrial unrest, determine what caused it and suggest a remedy. The committee came to the conclusion that basically it was caused by a too prevalent spirit of greediness and suspicion. The remedy suggested by the committee, enthusiastically endorsed by the Philadelphia Chamber of Commerce, was the recognition of the Golden Rule in its best and highest sense. Attention was directed to the fact that the success of our forefathers in establishing a democracy in this country was due to the fact that they were inspired by a spirit of service and unselfishness and looked to Divine Providence for inspiration and leadership. United States Senator George Wharton Pepper in speaking to the group of 850 business men of Philadelphia, who later adopted what is known as the Golden Rule Pledge, stated that labor and capital could not be reconciled by any of the mechanical methods which trusted in force, but that "we must go back to God." The Golden Rule Pledge which was adopted by the Chamber of Commerce, and which is receiving endorsement by other similar bodies, and is being enthusiastically promoted by Philadelphia business men, follows:

Golden Rule Pledge

"As Americans, we recognize that we face a crucial condition in our social, political and industrial life, which, if not corrected, can lead only to individual and national disaster.

"We Recognize that the trend of combining interests of individuals and groups will continue.

"But We Likewise Recognize that such interests in the creation of their relationships to the many must be controlled by the spirit of equity and reason if they are to endure.

"Unjust Exploitation of the many by the few, regardless of its position or field of activity, cannot continue, for self-preservation would force all citizens into hostile groups.

"The Remedy of our present malady lies in approaching the interests of others, be they employer or employee, buyer or seller, producer or distributor, individual or group, in a spirit of fairness actuated by the Golden Rule.

Facts

"We are all workers.

"The United States is our union.

"Our membership is over 100,000,000 in good standing.

"Our allegiance is first to God and then to that union.

"Our nation is a living expression of belief in our Creator.

"Liberty is our human right by Divine right.

"The Declaration of Independence acknowledges American liberty to be a gift of God: 'All men are endowed by their Creator with certain inalienable rights. * * * With a firm reliance on the protection of Divine Providence.'

—Declaration of Independence.

"The Declaration of Independence establishes, without discrimination

Independence of person

Independence of property and

Independence of contract.

"The Declaration of Independence is maintained by the Constitution of the United States.

"The Constitution of the United States is administered by representative government.

"Our representative government is controlled by public opinion.

"Public opinion is based on ignorance, illusion, prejudice—or knowledge, truth, judgment.

"The Declaration of Independence—the Constitution of the United States—and representative government will be maintained or destroyed by public opinion! Public opinion is what men think. Our problem is not to change habits, laws or men, but to make facts the basis of thinking.

"We, as Americans, recognizing the fundamental nature of the above facts, do hereby declare that we will in all ways urge upon our associates, and those with whom we come in contact, the importance of making facts the basis of their thinking, and

"We Pledge our loyalty and renew our allegiance to God and Country to the end 'That this nation under God shall have a new birth of freedom and that the government of the people, by the people and for the people' (Lincoln) shall be sustained."

Question. This sounds well, but can it be interpreted in the terms of actual practical application? Does it not border too much on the sentimental?

Answer. Many schemes and methods have been suggested and tried throughout the industrial world for replacing the friction and unrest between the employees and the managements with a spirit of co-operation and teamwork. Some of these plans have proved eminently successful, but only to the degree that they were dominated by a sincere appreciation of the spirit of a square deal, based on the Golden Rule. Looking at the facts frankly, it must be admitted that the most serious problem confronting the railroads today is that of employees' relations. Railroad managements and railroad employees realize that things are not as they should be, and that they cannot continue on the present basis. Both sides are earnestly seeking relief from this impossible situation. Unless the spirit of friction and unrest that exists in many cases can be replaced by a spirit of co-operation and teamwork, the railroads are surely headed toward disaster, which will in the last analysis, affect adversely the interests of the public, the employees and the investors. The old methods of organization and of directing the human element have failed absolutely. The one thing that is left, and the only one which promises any real relief and success, is that which has been suggested in this catechism.

What could the railroads not do in giving better and more adequate service to the public, in improving the living conditions of the employees, and in insuring a fair return to the investors if the organizations could be dominated by the Golden Rule—"Thou shalt love thy neighbor as thyself, and thou shalt do unto others as ye would have them do unto you."

FIVE HUNDRED THOUSAND TONS was the amount of ice transported by the Delaware, Lackawanna & Western in 1921, according to an advertisement of the road printed in New York City papers. Most of this ice was taken from lakes in the hills and mountains of New Jersey and Pennsylvania. It is cut with modern machinery, and is so pure that it can be used for storage batteries, druggists' prescriptions and other purposes ordinarily requiring distilled water. About 100,000 tons is shipped to creameries. Ice houses have discarded sawdust and straw packings in favor of insulated walls. Ice cars are carefully washed and pre-cooled and the ice protected from shrinkage by paper linings. The Lackawanna ices refrigerator cars at Buffalo, Elmira, Gouldsboro and Hoboken, and there are separate icing stations for milk cars at Binghamton, Richfield Springs and Chenango Forks.

Who Builds the Highways?*

WHO SHALL PAY for the construction and maintenance of hard-surfaced roads to be ground to powder under the wheels of motor vehicles, of which many of the most destructive compete with the railroads for freight and passenger traffic? The growing use of motor vehicles for commercial purposes and the extension of hard-road systems to cover the entire country make this an important problem. The railroads and their patrons have a great deal at stake in the solution of it.

There were approximately 10,500,000 motor vehicles in this country in 1921, of which more than 1,000,000 were trucks, commercial cars, taxicabs and buses, engaged in the service of transportation. To a large extent, it is true, the service performed by this motorized fleet is supplemental to the transportation service performed by the railroads, but in many instances the two services are competitive. Whether motor vehicle transportation service is supplemental to or competitive with the railroads, however, does not alter the problem.

The railroads pay for the construction, maintenance and improvement of the roadways over which their trains pass, and that cost necessarily becomes a part of the nation's railway transportation bill. In 1921 the maintenance of the tracks, roadbed, buildings, bridges and other structures used by the railroads cost \$756,948,985. This was exclusive of interest on the investment and improvements chargeable to capital account. It represents approximately 16.5 per cent of the total operating expenses of the railroads in 1921. A considerable part of the revenues received by the railroads from carrying freight and passengers went to pay that particular cost.

More than 1,000,000 motor vehicles used the public roads for commercial purposes last year. The amount which they paid for that privilege represents only a small fraction of the cost of constructing, maintaining and improving the roadways which they helped to destroy. The total revenues derived from the registration of all motor vehicles and from the issuance of licenses to owners, chauffeurs, manufacturers and dealers amounted to \$122,269,071.33, out of which there was available for road work \$116,117,167.80, exclusive of taxes on gasoline, which amounted to \$5,302,259.79. As compared with this, however, the construction of highways in the United States last year cost \$767,421,375. The difference represents the amount which the public had to pay out of funds raised by general taxation. In other words, the users of all motor vehicles paid about 15 per cent of the cost of road-building, and the other 85 per cent was paid by general taxation.

The public at large has as great an interest in transportation by railroad as it has in transportation on the public highways. In fact, the benefits accruing from the use of the railroads are more widespread than the benefits accruing from the use of the highways by the more destructive vehicles—trucks, commercial cars, taxicabs and buses. It is no more equitable that those who do not derive immediate benefit from the destructive use of the highways should pay for them than that the public should be taxed for the cost of building, maintaining and improving the roadways used for rail transportation.

It is important to note in this connection that the railroads pay a not inconsiderable portion of the taxes from which come the funds for 85 per cent of the road work. In 1921 the taxes paid by the Class I railroads of the country in the various states amounted to \$237,872,319. This was exclusive of \$37,176,773 in federal taxes, \$79,042 in District of Columbia taxes, \$660,218 in Canadian taxes and \$95,244 in taxes not localized to the states.

In order to emphasize the comparison between motor

vehicle revenues and highway expenditures, there is shown herewith a table giving the figures by states for 1921.

It is up to railway men to impress upon the public the fact that every burden placed upon the railroads is a burden upon their patrons. The railroads do not have an inexhaustible supply of funds out of which to pay operating expenses, taxes and other charges. A railroad is an institution organized for the giving of a great public service, in the performance of which certain costs are incurred, and these costs are charged back against the public in the form of freight and passenger rates. The shippers and passengers who use the railroads, therefore, pay the railroads' operating expenses, taxes and other charges as truly as if the railroads were not an intermediate involved party in the financial transaction.

When the public gets that view of the situation—and it is the proper view—there will be fewer attempts to unload tax burdens and burdensome operating costs upon the railroads. And when the public comes to realize that the cost of building, maintaining and improving the highways is not being paid by those who put them to a destructive use, a solution will be found for this problem.

	Motor Vehicle Revenues	Highway Expenditures
Alabama	\$1,147,265.00	\$4,065,000.00
Arizona	195,969.75	8,800,000.00
Arkansas	856,543.60	23,300,000.00
California	6,834,089.52	38,200,000.00
Colorado	906,059.27	8,291,898.00
Connecticut	2,129,861.12	*6,000,000.00
Delaware	375,469.00	3,403,822.00
Florida	734,845.50	5,180,000.00
Georgia	1,705,941.24	25,153,452.00
Idaho	841,212.93	*15,000,000.00
Illinois	6,803,556.21	30,300,000.00
Indiana	2,422,227.00	14,000,000.00
Iowa	7,719,127.47	28,323,920.00
Kansas	†1,400,000.00	23,366,848.00
Kentucky	1,771,887.02	8,500,000.00
Louisiana	453,276.00	12,430,918.00
Maine	1,004,750.25	7,052,419.00
Maryland	2,460,162.04	*8,850,000.00
Massachusetts	4,717,389.30	14,000,000.00
Michigan	6,751,924.51	31,000,000.00
Minnesota	5,672,424.61	25,672,859.00
Mississippi	751,946.63	6,000,000.00
Missouri	2,505,353.90	13,675,000.00
Montana	594,520.50	6,714,409.00
Nebraska	2,824,811.25	11,032,895.00
Nevada	102,800.00	1,710,379.00
New Hampshire	876,322.14	3,423,000.00
New Jersey	3,974,063.75	14,030,000.00
New Mexico	198,632.77	3,238,366.00
New York	†10,288,858.25	47,126,068.00
North Carolina	2,259,240.43	*8,078,298.00
North Dakota	683,052.45	4,600,000.00
Ohio	6,894,159.73	57,000,000.00
Oklahoma	2,619,713.49	9,800,000.00
Oregon	2,334,931.25	23,000,000.00
Pennsylvania	9,470,174.31	*58,525,232.00
Rhode Island	848,723.59	2,300,000.00
South Carolina	741,114.79	5,600,000.00
South Dakota	720,587.00	12,275,000.00
Tennessee	1,387,870.10	11,000,000.00
Texas	3,806,395.25	51,481,000.00
Utah	441,359.88	6,989,036.00
Vermont	668,288.50	3,200,000.00
Virginia	2,021,146.09	*11,400,000.00
Washington	3,140,730.74	15,900,000.00
West Virginia	1,250,525.82	9,000,000.00
Wisconsin	3,671,645.50	24,750,000.00
Wyoming	288,121.88	4,681,556.00
Totals	\$122,269,071.33	\$767,421,375.00

†For period July-December, inclusive. *Estimated. ‡For period February-December, inclusive.

Motor vehicle revenues include the revenues from motor vehicle registrations and from owners', chauffeurs', manufacturers' and dealers' licenses. Figures furnished by Bureau of Public Roads, Department of Agriculture.

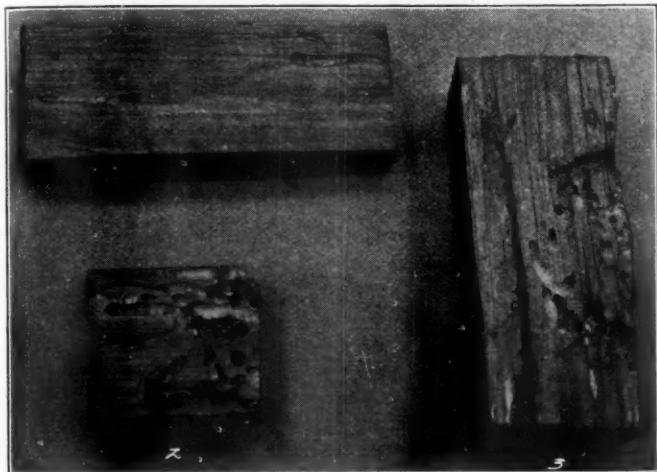
Highway expenditures include the amounts spent in various states for highway construction. Figures furnished by Bureau of Public Roads, Department of Agriculture.

* From an editorial in the Illinois Central Magazine for October, 1922.

Marine Borers Attack Piling Along Atlantic Coast

The National Research Council Has Undertaken an Investigation to Determine Methods of Protection

BECAUSE of the large investment which the railways and other industries have made in docks and other structures along the waterfront in the harbors along the Atlantic coast, there is cause for concern in the evidence now being brought to light regarding the appearance of marine borers in these waters. Only three years ago the collapse of a



Condition of Test Blocks. (1) From Ft. Sumpter, S. C., Installed on September 6, 1922, and Removed on October 2, 1922. (2) From Ft. Sumpter, S. C., Installed on September 6, 1922, and Removed on October 23, 1922. (3) From Ft. Scriven, Ga., Installed on September 15, 1922, and Removed November 1, 1922.

number of structures in San Francisco Bay brought the ravages of these borers prominently before the owners of waterfront property in this country. As a result of the great damage done in the upper waters of San Francisco Bay, previously immune from marine borers, a committee was

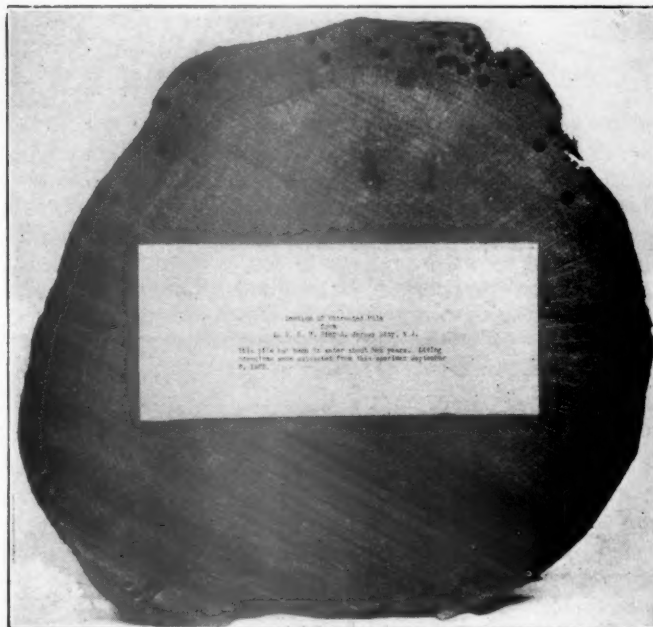


(Left) Condition of Untreated Pile Attacked by *Bankia* after One Year's Service in Harbor at Norfolk, Va. (Center) Untreated Piling Attacked by *Martesia* (Right) Condition of Untreated Pile Attacked by *Bankia* after Six Month's Service in Harbor at Norfolk, Va.

organized by local interests to study the problem. This committee soon found that it was necessary to enlarge the scope of the work so as to cover the entire country, and at its suggestion the National Research Council organized a committee to carry on a nation-wide study.

An investigation of the existing literature showed that while much study had been given borers for the past three hundred years, these studies had been disconnected and while much information had been developed, no conclusion had been reached. It was evident that a co-ordinated biological, engineering and chemical investigation offered the best chance for success.

There was found to be little information as to the distribution of the various species of borers and their living requirements. It was, therefore, necessary to find out where these various species existed, under what conditions they lived and what conditions in the water governed their distribution and activities. The damage in San Francisco

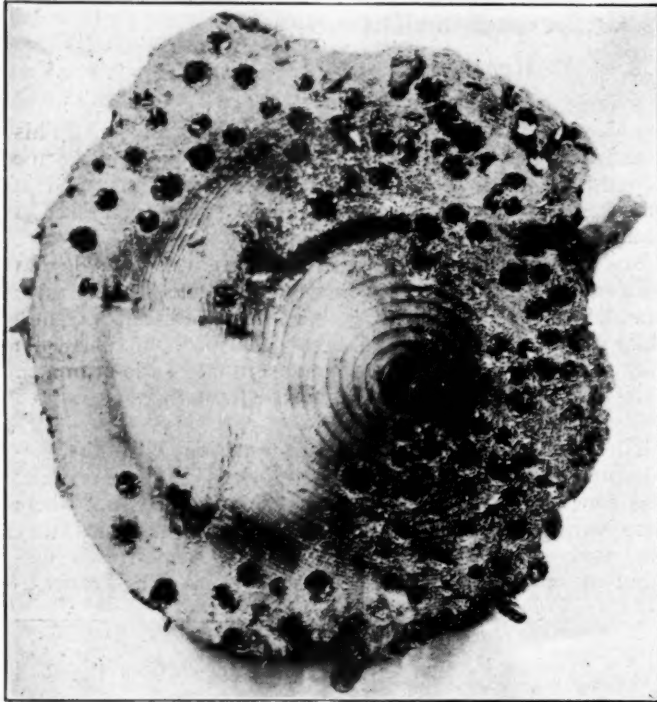


Section of an Untreated Pile from Lehigh Valley Pier at Jersey City after Ten Year's Service Indicating Recent Attack. Living Organisms Were Extracted from This Pile in September, 1922

was done by the *teredo navalis*, the pile-worm of Holland. No thoroughly authenticated records could be found which indicated its previous occurrence on the American coasts. It was first identified on the East coast in Barnegat Bay, New Jersey, in 1921.

In order to secure definite information regarding the distribution of the various species and their rate of growth, a test board was designed carrying 24 blocks, one of which is to be removed from each board on the first and sixteenth days of the month and sent to Harvard University or the University of California for biological study, determination of species and rate of growth of the different species. These test boards are expected to determine the presence and species of marine borers in any locality and also the time of the year in which they work and breed. The blocks are 2 in. by 4 in. by 5 in. in size, of wide ring sappy yellow pine,

surfaced on four sides. Each block is identified by a copper tag. The board with its 24 blocks is sunk from the end



Condition of a Pile Removed from the Standard Oil Company's Pier at Bayonne, N. J., in November, 1922, After Seven Year's Service

of a wharf or pier to an elevation about a foot above the mud line and fastened securely in place.

With the co-operation of the railroads, the Coast Guard,

the Navy, the Army, the Bureau of Lighthouses and various state and municipal bodies and industries owning waterfront structures, 235 of these boards have been put in place between the Eastern boundary of Maine and Kodiak, Alaska, as well as in harbors of the American possessions in the Caribbean Sea and on the Pacific Islands. The first boards were placed in June, 1922, and the number has been increased until the total mentioned above are now in place.

As a result of the inspection of the blocks taken from these boards, teredo navalis has been found in practically all harbors from Provincetown, Mass., south to Delaware Bay, and in several other harbors in the South Atlantic and Gulf. Because this species appears to thrive in water of low salinity and with a high degree of pollution, and since it also has a very high rate of reproduction, it may be considered as probably the most destructive species of borer. The greatest activity has been found in Providence, R. I., where blocks on one of the test boards were practically destroyed in three and one-half months.

Bankia gouldi (xylotria) have been found from Delaware Bay south through the Gulf and on the Pacific Coast. This species grows at probably twice the rate of teredo navalis, but it does not reproduce as rapidly—probably about 1,500,000 young per year as against 2,500,000 for teredo navalis, and so far as known it does not seem to have the resistance to low salinity and pollution that teredo navalis possesses. One of the boards carrying the test blocks in Galveston Bay was totally destroyed in two months by bankia.

A number of new or little known species of molluscan borers have also been identified; some of them apparently not being affected by creosote. The economic importance of these species will be established by further study of the test blocks.

Limnoria have been identified in harbors practically all the way from Maine to Alaska. Their rate of destruction is extremely variable. It seems to be high in some locations in New England and in some Gulf and Pacific harbors.

The biological studies have shown some interesting and



Map Showing Location of Test Boards, Laboratories and Experiment and Salinity Stations

perhaps significant indications in the effect of the proximity of copper and iron to the borers and tests are now being carried on at Providence, R. I., Charleston, S. C., and Galveston, Texas, to determine whether a system of protection for both old and new structures cannot be developed by the use of these metals in strips or wire. The laboratory studies of teredo navalis carried on by the University of California have given some extremely valuable information regarding this most destructive species.

In co-operation with the University of California and the Forest Products Laboratory, test blocks impregnated with various chemicals and various fractions of creosote are being tested by immersion in Gulf and Pacific harbors. Tests are also being made of several tropical woods which are reported to resist borers. Some of these timbers have European and Asiatic records showing a high resistance. As a portion of the report of the Wood Preservation committee of the American Railway Engineering Association to be submitted in March, 1923, a comprehensive study has been made of the literature on the subject of service records of various methods of protection. This report, when published, will give considerable information as to methods which have not been

successful, as well as others which have given good results over considerable periods.

Reinforced concrete as a substitute for timber is becoming more and more used. Unfortunately, its record is not one of universal success. In fact, the committee has found very many more cases of failure than of success, and in most cases the causes of failure are very obscure. Studies are being carried on to endeavor to determine these causes and to produce a specification which will result in a construction which can be depended on to give long life, if such a thing be possible with this material.

As the investigation goes on, the interest of the various co-operation agencies has been increasing, as several ideas giving some promise of satisfactory results have developed from the study. The next season's work should be even more productive than the last, as the preliminary work is largely completed and the lines of investigation to be followed by the biologists and chemists are becoming much clearer.

This investigation is being conducted by the Committee on Marine Piling Investigations of the National Research Council, New York City, of which William G. Atwood is director.

Road Test of Clifford Automatic Train Control

Apparatus of the "Conductive" Type Having Continuous Control Feature Tried Out On the Erie

A DEMONSTRATION and test of an automatic train control device which has been developed by the Clifford Automatic Train Control and Signal Corporation was made on the Erie before the New York Central Lines Signal Committee, Train Control branch, other interested railroad men and guests on November 28. A Pacific type passenger locomotive was equipped with the control apparatus while other apparatus was used in the car to demonstrate its operation. The tests were made on the eastbound main track between Port Jervis, N. Y., and Graham, four block sections being equipped with the train control circuits.

The train control apparatus developed by this company is what is known as the "conductive" system. It gives an indication at any point in the block corresponding to any change which takes place in the track conditions ahead. No roadside apparatus is employed, as a superimposed circuit is used in connection with the track circuit and the drop in voltage between the front axle of the engine and the rear axle of the tender in train control territory is utilized as the primary impulse to actuate the apparatus. Through the primary impulse, which actuates specially designed three-position polarized relays, other relays, of the telephone type, are controlled; which in turn govern a solenoid magnet which actuates the air apparatus and also the cab signal. The cab signal is auxiliary to the system itself and can be used or not as desired. This signal consists of white, red, yellow and green lights, from which four indications are obtained. Time element relays of the inverse time element overload type are used in connection with the delayed application effect. The entire electrical equipment, with the exception of the eight-volt storage battery, will be contained in a box 5 in. by 8 in. by 12 in. mounted in a convenient location on the engine.

The circuits used in the test were d. c. polarized circuits of the double rail type. The imposed circuits are carried to the rails over two No. 6 B. & S. gage copper wires and equalized by keeping the voltage in the two rails balanced with the line. The imposed voltage is approximately 18 volts per circuit. In order to get the advance indication

the polarity is reversed on the imposed circuit. Current is required in each block section to permit the train to proceed and in this manner the apparatus is made self checking. The circuits which can be used are the double rail imposed circuit, the single rail imposed circuit or the diagonal wired double rail imposed circuit. These have been designed to meet varying conditions and their application is not confined to d. c. steam road operation. An eight-volt storage battery is used to operate the air valve and cab signal lights on the locomotive.

The engine air equipment consists of an eliminating valve cut in the main reservoir lead between the engineman's automatic brake valve and the pipe leading to the main reservoir. The function of this valve is to prevent the engineman from releasing his brakes after an application is made, but it does not prevent him making a greater application if desirable. In addition to the eliminating valve there is an electro-pneumatic or solenoid valve controlled through the track circuit; and also the actuating valve, which sets in motion the automatic brake control valve, which in turn controls the eliminating valve which makes the proper brake pipe reduction. After the proper brake pipe reduction has been made, the actuating valve returns automatically to its normal position. After the stop is made, there is a releasing valve which, when opened, actuates a piston in the eliminating valve which again opens up the lead from the main reservoir to the engineman's automatic brake valve.

Under normal conditions the solenoid valve is always energized. When it is de-energized the solenoid opens an air valve which allows equalizing air to flow against a piston in a graduated air valve which produces an application of the brakes in proportion to the speed of the train and at the same time cuts off the main reservoir supply to the standard E. T. or L. T. brake equipment so that the engineman cannot release his brakes until the train is brought to a stop; but he can make a heavier application if he wishes. As stated above, after the solenoid valve produces the necessary stop application it closes automatically and returns to normal, leaving the standard brake equipment lapped and the

automatic features of the train control device ready for a further application.

The tests made consisted of running the engine in automatic block signal territory not wired up with the train control circuits to show that the engine equipment was not sensitive to the ordinary track circuit; engine running in train control territory with the blocks clear; a shunt put on the track two blocks in advance, showing that the engine would receive an advance caution indication (white and green light) two blocks back, and a caution (yellow light) followed by a stop indication (red light) with an automatic brake application in the next block; a test of the air apparatus to show that the engineman could not prevent the stop but could make a greater application of the air, and a test showing how the device operated when attempting to follow a train too closely.

When the engine entered train control territory, not occupied, the green light showed. A shunt was then put on the track two blocks ahead and the white and green lights showed, these automatic functions taking place irrespective of the train's position in the block. When the train ran into a red block at a speed of 45 m. p. h. or under, the yellow light showed up for about 20 seconds (delayed application), after which the yellow light went out, the red light came on and the train was stopped automatically. If the train operates at a speed over 45 m. p. h. there is no delayed application, but the red light appears immediately and the stop takes place.

The next test was made with the train moving at approximately 25 m. p. h. by putting a shunt on in the block in which the train was running. A delayed stop application was made. With the shunt still on, the engineman released himself after coming to a full stop and then proceeded. The shunt was then taken off with the train in the block and the apparatus cleared up automatically, the green light showing.

The train next went on a siding to allow another train to pass, and after it had cleared the block the train backed out of the siding, the apparatus automatically indicating a clear block by the green light showing.

The next test consisted in opening the track wiring on one of the superimposed circuits to show that the apparatus would still function through the remaining circuit on the one rail. When the train ran from automatic train control territory into non-automatic train control territory an automatic stop was made with the apparatus as it was installed for test purposes. After the engineman released himself he could then proceed without receiving additional stops.

In order to test the effect of foreign current keeping a track relay energized with a train in the circuit, a shunt was put on a block in advance of the train and the track relay was maintained in its normal position corresponding to no train in the block. When the train ran into this section it was automatically stopped in braking distance. This test produced the same effect as if the train had run from automatic train control territory into non-automatic train control territory.

Another test made was to have the test train attempt to close up the gap between itself and a train ahead. In this test the proper indications were received, corresponding to the positions of the trains in the respective blocks, but when the test train ran into the block occupied by the train ahead, the test train was automatically stopped.

As the speed control apparatus was not installed no speed control tests were made, those conducted being in connection with the automatic stop feature only.

Freight Car Loading

WASHINGTON, D. C.

ALTHOUGH the number of cars loaded with revenue freight is showing the usual seasonal drop the reduction continues to be less abrupt than it has been at this season in recent years. For the week ended November 25 the total was 955,495, which was over 13,000 cars less than the loading for the previous week but was 282,030 more than the loading for the corresponding week of last year and 151,794 more than that for the corresponding week of 1920. This was partly due, however, to the fact that the Thanksgiving day holiday last year and the year before came earlier in the month than this year, which destroys the value of comparisons with the figures for the corresponding calendar dates. Grain and grain products loading continued heavy, with a total of 54,790 cars, or slightly less than the week before. Coal loading showed a decrease of about 3,000 but there were increases in the loading of coke, forest products and miscellaneous freight. Ore loading, 15,052 cars, was only about half of that for the previous week.

The freight car shortage was further reduced during the period from November 15 to 23 to 152,565 cars. This was a decrease of 5,671 in approximately a week. The shortage included 79,037 box cars and 43,683 coal cars. At the same time 5,306 surplus cars were reported.

REVENUE FREIGHT LOADED

SUMMARY—ALL DISTRICTS, COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO. WEEK ENDED SATURDAY, NOVEMBER 25, 1922

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L.C.L.	Miscellaneous	Total revenue freight loaded		
										This year 1922	Corresponding year 1921	Corresponding year 1920
Eastern	1922	10,614	4,171	64,790	2,710	5,937	2,358	64,051	89,392	244,023	.....	.....
	1921	8,103	2,819	39,521	1,647	4,194	1,203	56,289	58,785	.....	172,561	185,290
Allegheny	1922	3,848	3,838	57,782	6,465	3,642	4,989	47,282	76,119	203,965	.....	.....
	1921	2,079	2,784	41,075	3,128	2,636	1,989	42,638	45,872	.....	142,201	173,179
Pocahontas	1922	272	123	17,947	578	1,693	128	5,893	3,439	30,073	.....	.....
	1921	192	100	15,677	147	1,176	.....	4,974	2,787	.....	25,053	31,622
Southern	1922	3,853	2,444	24,450	1,200	22,943	1,215	38,480	44,943	139,528	.....	.....
	1921	2,818	1,636	16,439	461	15,950	471	33,203	32,327	.....	103,305	121,190
Northwestern	1922	17,394	11,189	10,086	1,756	15,812	3,636	26,509	36,363	122,745	.....	.....
	1921	9,593	6,915	7,931	722	8,609	713	23,250	22,313	.....	80,046	107,234
Central Western	1922	13,508	15,033	21,683	393	7,919	2,132	30,949	53,668	145,285	.....	.....
	1921	8,964	9,209	14,299	121	4,730	704	26,543	31,083	.....	95,653	120,789
Southwestern	1922	5,301	3,419	5,294	132	8,100	594	15,607	31,429	69,876	.....	.....
	1921	3,410	2,308	3,078	130	6,496	638	13,927	24,659	.....	54,646	64,397
Total Western districts	1922	36,203	29,641	37,063	2,281	31,831	6,362	73,065	121,460	337,906	.....	.....
	1921	21,967	18,432	25,308	973	19,835	2,055	63,720	78,055	.....	230,345	292,420
Total, all roads	1922	54,790	40,217	202,032	13,234	66,046	15,052	228,771	335,353	955,495	.....	.....
	1921	35,159	25,771	138,020	6,356	43,791	5,718	200,824	217,826	.....	673,465	.....
	1920	33,308	29,987	208,966	14,445	48,014	31,964	177,517	259,500	.....	.....	803,701
Increase compared	1921	19,631	14,446	64,012	6,878	22,255	9,334	27,947	117,527	282,030	.....	.....
Decrease compared	1921	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Increase compared	1920	21,482	10,230	.....	.....	18,032	.....	51,254	75,853	151,794	.....	.....
Decrease compared	1920	.....	.....	6,934	1,211	16,912	.....	.....	.....	.....	.....	.....
November 25	1922	54,790	40,217	202,032	13,234	66,046	15,052	228,771	335,353	955,495	673,465	803,701
November 18	1922	55,204	40,735	205,024	12,431	61,403	32,780	228,922	332,595	969,094	790,363	889,138
November 11	1922	52,501	38,001	188,312	12,273	60,392	39,383	228,050	334,997	953,909	755,777	927,586
November 4	1922	51,912	39,731	194,077	11,641	60,013	47,046	234,737	355,670	994,827	837,576	915,615
October 28	1922	51,913	42,644	197,928	11,388	60,584	48,005	233,680	368,338	1,014,480	951,384	981,242

Southern Pacific—Central Pacific Hearing

Most Pacific Coast Witnesses Want Unified Operation Retained—Middle West for Separation

WASHINGTON, D. C.

THE HEARING before Commissioner Meyer and Potter of the Interstate Commerce Commission on the application of the Southern Pacific for permission to retain control of the Central Pacific has been continued during the past week, testimony being presented by representatives of the various commercial organizations and state commissions that have intervened in the case either in support of or in opposition to the application. In a general way most of the representatives of California and other Pacific coast communities have strongly urged the retention of the present unified operation of the Southern Pacific-Central Pacific lines, or at least that there should be no separation until the commission has completed its final consolidation plan and has definitely allocated the Central Pacific, while representatives of the inter-mountain and middle western communities served by the Union Pacific have been more inclined to favor the separation of the Central Pacific from the Southern Pacific and its operation either independently or by the Union Pacific. Members of the California Shippers' Committee Against Dismemberment of the Southern Pacific-Central Pacific System have shown more interest in the network of lines in California and indicated the belief that their interests would be better served by maintaining a strong railway system with headquarters in California than by building up competition against it and they have also insisted that rates would be increased and service impaired if the present system and its methods of operation were disrupted.

Those supporting the Union Pacific contention that the Supreme Court's decree ordering a dissolution under the Sherman law should be carried out have shown more interest in the line from Sacramento to Ogden and have taken the position that the Southern Pacific discriminates against the Ogden route because of its greater interest in the longer haul over Southern Pacific rails via the El Paso gateway and that if the Central Pacific were operated independently or by the Union Pacific it would display more interest in developing the territory served by the Ogden line and the Union Pacific. The witnesses have been cross-examined by counsel for the Union Pacific and the Southern Pacific and there has been much discussion of the extensive propaganda conducted by both roads and by the organizations that have lined up with them and numerous questions as to who paid for advertising and publicity matter or what promises on the part of the roads influenced the attitude of the shippers.

Labor Intervenes for S. P.

In addition to the shippers, bankers and public officials who have testified, general chairmen of the train service organizations on the Southern Pacific, reinforced by Grand Chief Warren S. Stone of the Brotherhood of Locomotive Engineers, appeared and protested vigorously against a separation of the Central Pacific from the Southern Pacific, on the ground that it would cause relocation of terminals and the creation of new divisions, thereby uprooting the employees from their homes, causing chaotic conditions affecting their seniority rights and reducing the continuity of employment by dividing the work in California between two railroads.

C. E. Childs of the Omaha Chamber of Commerce testified on November 28 and opposed the Southern Pacific petition, urging the development of the Central Pacific and Union Pacific as a through transcontinental line. He was followed by a number of representatives of the California committee against dismemberment, who supported the Southern Pacific application, including H. H. Sanborn, traffic

expert for the committee; Alden Anderson, representing the California Fruit Distributors; James A. Keller, of the Pacific Portland Cement Company; H. H. Van Horn of the California Packing Corporation; Frank Clifford of the Sperry Flour Company; Dallas H. Gray, of the Shippers' Committee for the South San Joaquin Valley; G. J. Bradley, of the Merchants' and Manufacturers' Association of Sacramento; Seth Mann, of the San Francisco Chamber of Commerce; Frank M. Hill, of the Fresno Traffic Association; F. P. Gregson, of the Associated Jobbers of Los Angeles; R. L. Vance, of the California Portland Cement Company; C. L. Bailey, representing warehouse owners; H. E. Woolner, of the Great Western Milling Company; Charles R. Thorburn of the Watsonville Chamber of Commerce, and C. L. Crumrine of the La Habra Shippers' Association. E. O. Edgerton, director of the shippers' committee, filed with the commission 1,000 copies of resolutions adopted by commercial and civic bodies of the Pacific coast territory, which, he said, urged the commission to allow the Southern Pacific to continue to operate the Central Pacific as one system.

See Increased Rates

Many of these witnesses said that a separation of the two roads would substitute two or three line hauls for one line hauls with a consequent increase in rates which, in many instances, they said, would be sufficient to interfere with the movement. Mr. Mann said that while the San Francisco Chamber of Commerce in 1913 had assented to the proposal that the Central Pacific be sold to the Union Pacific, it was influenced at that time by the fact that the government had announced its intention of bringing suit for a separation of the Central Pacific from the Southern Pacific and he also said that conditions had changed since that time. The Panama Canal lines have taken a large part of the trans-continental traffic, the Union Pacific has acquired complete ownership of a line into Los Angeles and there has been a complete change in the country's transportation policy as expressed in the Transportation Act.

The representatives of the employees spoke in a very complimentary way of their relations with the Southern Pacific management and expressed some doubt as to whether their relations would be so satisfactory with another railroad. For example, they said another company might not maintain a pension system. They also said that the Southern Pacific's interest in California was so diversified that it is enabled to employ a large number of trainmen on its southern lines at one time of the year and its northern lines at another time, thereby giving continuous employment which they might not have if the service and the employees were divided among different companies. They testified as to the large number of men that own their own homes and said that some of them were afraid they would have to leave the salubrious climate of California. Also, it was stated that the men who stand high on the seniority list on the Southern Pacific would be placed much lower on the list if transferred to the service of another railroad and perhaps might not be able to obtain employment because of their age.

On December 2 a number of witnesses took the stand in support of the Union Pacific's contention in this case that the Central Pacific should be separated from the Southern Pacific. The first of these was Frank Francis, mayor of Ogden, who said that the Southern Pacific showed only a passive interest in the Central Pacific line to Ogden and treated it as a bridge for through traffic, while reserving its

progressive upbuilding and development work for the territory from which it would receive a longer haul. James Brennan of Ogden, banker and live stock man, also gave similar testimony. A. M. Holloway of Salina, Kan., testified that under present conditions shippers in the middle west are not able to use the Ogden route to the fullest advantage. H. H. Corey, member of the Public Service Commission of Oregon, told of that commission's recent petition to the Interstate Commerce Commission for an order requiring one or more of the railroads of the state to build additional lines through eastern, central and western Oregon and said that the commission is interested in a disposition of this case which will bring Oregon more railroads and more competition. It would oppose, he said, any lease of the Central Pacific to the Southern Pacific which would preclude any joint use of that company's lines in connection with the proposed Natron cut-off. On cross-examination by F. H. Wood, counsel for the Southern Pacific, he said that that question is the particular concern of the Oregon commission and that it would not object to a temporary arrangement which would cause only a reasonable delay in the construction of that line.

The I. C. C.'s Jurisdiction

This led Commissioner Potter to question Mr. Wood as to whether the Southern Pacific's petition contemplates only temporary relief and as to what will be the situation if the commission should decide that it has power only to deal with the permanent situation. Mr. Wood said the company's desire is to present to the commission primarily the situation for the immediate future, because it desires to avoid disruption of its system which might become unnecessary if the Central Pacific were finally allocated to the Southern Pacific in the consolidation plan, but that it asked relief to the extent which the commission shall decide is in the public interest. It has no desire to limit its application to temporary relief, but intended to leave it to the commission to determine the extent of the relief that could be allowed.

A number of witnesses also appeared from Salt Lake City who differed from the position which had been previously taken by witnesses who had appeared on behalf of the governor of the state and the Salt Lake Commercial Club. They said that the people of Northern Utah in general were in favor of an independent Central Pacific that would be interested in developing the territory which it traversed. One of the witnesses told the commission that it would have great difficulty in ascertaining the real sentiment of the shippers and of the public because so many who had taken sides in the case had been influenced by propaganda without making a first-hand investigation of the facts. It was admitted that the Oregon Short Line had paid for some of the full page advertisements which had appeared in Utah papers in the name of the committee of shippers.

Admits Association Financed by U. P.

A strong opposition to the Southern Pacific's application was expressed on behalf of the California Producers' and Shippers' Association. E. F. Treadwell made an opening statement for this association in which he undertook to reply to a statement made by Mr. Wood at the opening of the hearing that this association was "merely an alias" for the Union Pacific. He said that after the Southern Pacific had undertaken a publicity campaign, the Union Pacific had undertaken a counter campaign by getting the support of a large number of producers and shippers throughout the state and that an organization had been formed which consisted of 8,000 members, who, he said, are deeply interested in seeing the spirit of the court decision carried out. He said the association is not pledged to support any ambition of the Union Pacific to acquire the Central Pacific, but is willing that its disposition be controlled by natural laws and

by the commission under the laws of the United States. Charles Teague and Van Bernard appeared as witnesses on behalf of the association, among others, asserting that there is a large territory in the Sacramento and San Joaquin valleys that is inadequately served by the railroads, that the farmers have suffered enormous losses by reason of car shortage and that the territory would not be adequately developed without the competition of additional lines. On cross-examination by Mr. Wood, Mr. Bernard, who appeared as a farmer and as chairman of the executive committee of the California Producers' and Shippers' Association, admitted that the organization had been financed by the Union Pacific and that he was being paid by the Union Pacific. Under questioning by Mr. Wood, he testified that the present organization was formed on July 21, although he and a few others had been doing organization work before that and that he had appointed an executive committee consisting first of a farmer, who afterward resigned, two real estate men and an insurance man. Meetings were held and members secured by distributing postal cards, which, he said, had been signed by 3,720 up to the time he left California and additional names since had brought the total membership up to 7,837.

When Mr. Wood questioned him regarding publicity material in opposition to the Southern Pacific's efforts to retain control of the Central Pacific, which had been given out as coming from the "Washington headquarters of the shippers and producers of the Pacific coast," and later from the "Washington headquarters of the California Shippers' and Producers' Association," the same office address being given in both cases, he said he knew nothing of such publicity work prior to the date of this hearing, that the office named was not the headquarters of the association but the office of the publicity bureau which he knew had been giving out publicity during the hearing, and that neither he nor any one representing the association that he knew of had authorized or paid for the publicity. One of these statements purported to be an interview with Secretary McGinty of the Interstate Commerce Commission regarding the effect of the Supreme Court's decision on the commission's consolidation plan, which was dated June 23, 1922, prior to the date of the organization of the association. Mr. Bernard also denied knowledge of a statement handed him by Mr. Wood, in which Wallace Alexander of San Francisco had challenged the association to state who it represented, or a statement issued from the Washington publicity bureau on July 22 announcing the formation of the committee in Sacramento the day before. He said he had been in the office of the Washington publicity bureau but once, when he presented a letter from a publicity man in Sacramento who had been working with his association. When asked who paid the publicity men, he replied: "I don't mind telling you that so far as I know, the Union Pacific is paying the bills. We have made no secret of it."

Other witnesses for the association were Victor R. Larsen, of Lodi; H. S. Maddox, of Sacramento; H. H. Dunning, of Maryville; and John A. Livingston of Auburn, Calif.

Chicago for Separation

J. P. Haynes, appearing on behalf of the Chicago Association of Commerce, and the Chicago Shippers' Conference Association, urged that the Central Pacific be disassociated from the Southern Pacific control in order that the trans-continental route from the central west to San Francisco and northern California may be managed by those who are interested in developing new traffic for that route rather than by an organization whose primary interests, he said, are in the development of traffic from the Atlantic seaboard in preference to movement from the central west.

W. B. Biddle, former president of the St. Louis-San Francisco, speaking for canning interests of Oregon, said

that the interests of Oregon and the Pacific coast would be promoted by the increased competition which would result from a separation of the Central Pacific from the Southern Pacific and F. G. Donaldson, speaking for lumber interests of the Willamette Valley, said that the development of that territory was largely dependent upon increased competition.

Throughout the hearing there have been more publicity agents than newspaper men in attendance most of the time, and the newspaper men who have been sending out stories on it have had the assistance of three sources, as well as three distinct types, of publicity material. The Southern

Pacific's representatives have given out copies of the prepared statements of Southern Pacific witnesses and occasionally some extracts from the stenographic report of the hearing. Representatives of the shippers' committee against dismemberment have given out enthusiastically-written stories regarding the testimony of their witnesses and twice daily stories have been given out in the name of the California Producers' and Shippers' Association regarding the testimony of the witnesses who were opposed to the Southern Pacific application, and frequently giving adverse editorial comment on the testimony favorable to the Southern Pacific.

Annual Report of Interstate Commerce Commission

Regulator of Railroads Finds a Revenue Problem of Its Own In Reduced Appropriations

WASHINGTON, D. C.

THE Interstate Commerce Commission has made its annual report to Congress for the year ended October 31, 1922. For the reasons stated elsewhere in the report and in former reports, the commission makes the following recommendations:

Summary of Recommendations

1. That section 1 of the interstate commerce act be amended to provide for the punishment of any person offering or giving to an employee of a carrier any money or thing of value with intent to influence his action or decision with respect to car service, and to provide also for the punishment of the guilty employee.
2. To provide for increases in the number and salaries of locomotive inspectors and the increase in the number of inspectors under the safety appliance acts provided for by the first deficiency act, approved September 22, 1922, be made permanent.
3. That subject to appropriate exceptions the use of steel cars in passenger-train service be required, and that the use in passenger trains of wooden cars between or in front of steel cars be prohibited.
4. That the hours of service act of March 4, 1907, be so amended as to require all service of employees subject to the act to be construed as continuous service, except that if an employee is given a release from duty for a definite period of not less than three hours, and under such circumstances that the employee has proper facilities and opportunities for securing rest during such relief period, such relief period can be used to break the continuity of the service and the service ceases to be continuous and becomes aggregate service.
5. That to complete some and undertake other of the important duties and to keep the general work current, we recommend appropriations sufficient to meet our absolutely necessary requirements. * * *
6. That section 20a of the interstate commerce act be amended to cover electric railway companies engaged in the general transportation of freight.
7. That paragraphs 4 to 8, inclusive, of section 5 of the interstate commerce act be made to clearly provide whether and, if so, how voluntary consolidations may be effected pending ultimate adoption by us of a complete plan of consolidation.
8. That section 25 of the interstate commerce act be amended by making it unnecessary for common carriers by water in foreign commerce to file, and for us to publish, the information referred to in paragraph 1 of the section.
9. That section 19 of the merchant marine act, 1920, be amended so that its provisions will clearly not be applicable to the Interstate Commerce Commission, and that section 28 of this act be reconsidered by the Congress in the light of the circumstances set forth in our 35th annual report.

Appropriations Curtailed

The first part of the report is devoted to a discussion of the commission's experiences with government regulation of its own revenues by the Bureau of the Budget; an argument that the commission must have adequate appropriations to do its work properly. For the fiscal year ending June 30, 1923, the commission submitted to the Bureau of the Budget an estimate that \$5,649,500 would be required. The bureau,

after an extended investigation, suggested that because of the financial condition of the Treasury, certain additional activities delegated to the commission by the Transportation Act of 1920 be further held in abeyance and that the commission endeavor to perform its duties within amounts less than the estimates. Therefore, the estimates for this year were cut by the bureau to \$5,344,907. This included a reduction of \$130,000 in the appropriation for valuation work, from \$1,630,000 to \$1,500,000. These amounts were approved by the President and submitted to Congress, but were further reduced by Congress to \$4,879,500, the amount for valuation being reduced to \$1,300,000. The commission recently submitted a deficiency estimate for the fiscal year including \$100,000 for general purposes, \$73,500 for safety, \$201,917 for locomotive inspection, in response to which Congress appropriated \$100,000 for general purposes and \$66,150 for the work of the Safety Bureau, but failed to provide the amount requested for locomotive inspection. As a result, the commission's appropriations for the current fiscal year are \$5,045,650, impairing its ability to complete some and undertake other important duties laid upon it by law. This has resulted in curtailment of activities in several bureaus, notably those of accounts, service, safety, locomotive inspection and valuation. "The same is true," the report says, "as to the studies of economy and efficiency in operation which seem to have been contemplated by the Congress as necessary incidents to some of the duties expressly imposed by recent legislation."

In compliance with the direction of the budget bureau, the commission submitted prior to August 1 an advance report of its estimates for the fiscal year 1924 amounting to \$5,204,500, which included \$1,280,000 for valuation. The director of the bureau later advised that the President had approved the allocation to the commission of \$4,494,500 as a tentative maximum and that, therefore, the estimates should not exceed this amount; but if, in the opinion of the commission, the reduced amount would not meet its absolutely necessary requirements, the estimates might be accompanied by a supplemental statement. This amount, the commission points out, is \$710,000 less than its total estimate for the ensuing year and \$551,150 less than the current total appropriation. The report then says:

"We have given careful consideration to our work * * *. Reducing the appropriation for valuation more rapidly than we had planned may practically defer recovery of excess earnings under section 15a of the interstate commerce act. Reduction in the current appropriation for our bureau of accounts will retard the policing of carriers' accounts as contemplated by section 20, the revision of the accounting classifications, and the prescribing of classes of property for

which depreciation charges may properly be included under operating expenses. If we are to function promptly and efficiently, more funds must be supplied to care for the disposition of pending fourth section applications. Investigation and suspension cases are increasing and necessarily cause delay in the disposition of other cases. Under paragraph 3 of section 6 of the act we are authorized to make suitable rules and regulations for the simplification of tariffs, but thus far we have been able to only approach this important subject." (The recommendation of the budget bureau submitted to Congress on December 4 provides \$4,514,500 for the Interstate Commerce Commission.)

Car Service

In a review of the commission's exercise of its emergency powers relating to car service during the past year, the report points out that the accumulations of freight did not cause congestion at the large terminals as was the case in 1920. Loaded cars accumulated at intermediate terminals or were set out at sidings along the line. The effect of the shop strike caused deterioration of motive power. On certain important trunk lines, the report says, the condition of motive power was most serious and on some lines the number of locomotives retired for repairs was over 60 per cent of the total owned and this condition forced a diversion of freight to lines better able to handle it. Statistics are given showing the accumulated carloads which carriers were unable to move promptly. The number increased from 36,868 in the second week of July to 80,320 in the third week of September, but was then greatly reduced until for the fourth week of October it was down to 52,973. The commission reviews the shortage of freight cars (179,239 on October 31) and says that a considerable net surplus, perhaps 100,000 cars, is necessary to the prompt filling of orders and to avoid waste in transportation. This shortage is attributed to the lack of efficient transportation service, particularly in the south, during the early part of the shopmen's strike, and the inability of the carriers to move cars promptly on account of strike difficulties following the resumption of heavy coal shipments and seasonal crop movements in the north and west. Emergency orders were issued for lake coal, but dealers and consumers in regions remote from their sources of supply are urged to make contracts for a supply in season for early transportation. "They can hardly expect to rely upon our regulatory power continually to relieve them from the consequences of their own inertia." Acting under the coal anti-profiteering act, the commission has ordered priority in transportation and distribution in 14 instances covering 879 cars, but has not found it necessary to lay embargoes.

Freight Rates

A review is given of the case in which the commission made a general reduction in freight rates on July 1 and in this connection the commission says:

"The net railway operating income for the year 1921 was \$614,810,531, clearly an inadequate income. * * * The tonnage moved by the railroads has been steadily increasing in recent months until the traffic is almost equal to the largest ever handled. Manifestly the existing rates are no longer interfering with the free flow of commerce as a whole, whatever may have been the situation prior to the reductions of July, 1922. Little opportunity has been afforded for determination of the effect of the reduced rate level upon net earnings because of freight congestion * * *"

Locomotive Inspection

The work of the Bureau of Locomotive Inspection, the report says, has been restricted, the expenditures being kept within the appropriation of \$290,000 only by curtailing the activities of the inspecting force to the detriment of the service. There are only 50 inspectors for approximately 70,000 locomotives housed or repaired at 4,600 places.

Automatic Train Control

After outlining the orders issued for the installation of automatic train control devices, the report says the need for such devices has been further emphasized since January 1, by its investigation of six serious train accidents resulting from non-obedience to automatic block signals which resulted in the death of 50 persons and injury to 488 others.

Studies in Efficiency and Economy

Calling attention to the fact that the law requires that in adjusting rates it shall have in mind "honest, efficient and economical management," the commission says:

"To go into the question of efficiency of management in a thoroughly effective way would necessitate an organization of experts especially qualified to investigate the numerous and complex phases of railroad management, such as shop methods, locomotive performance, road and terminal operation, maintenance of way and structures, purchasing, and many others. This would involve a large additional appropriation and would in some degree duplicate the work of the technical staff of the railroads. We have not been convinced that we are called upon to engage in the study of operating efficiency upon this elaborate plan. We have undertaken, however, to emphasize to a greater degree than heretofore the systematic comparison of operating results through statistical reports. We have also given attention to plans for improving the efficiency of the national transportation system by a more effective co-ordination of the various transportation agencies.

"The subject of terminal expense is one of growing importance because of the complexity of terminal operation incident to commercial and industrial activity concentrated in large and growing cities. Delays in transportation are traceable in the main to terminal handling, not to the line haul, and terminal expenses seem out of proportion to line-haul costs. Intensive study of terminal problems, long important, has become of first importance to the communities served, the shipping public, and the carriers. Methods of handling less than carload shipments must be developed which will materially reduce the present cost and delay. The need is no less in respect of carload shipments and the release and return of cars. Discussion of such methods would be unprofitable at this stage of our studies, but we note with approval the attention which carriers are giving to the subject. We are convinced that much can be accomplished along these lines and that the carriers should accomplish it."

Bureau of Finance

Under paragraphs 18 to 22 of section 1 of the interstate commerce act, 100 applications for certificates of public convenience and necessity were filed. Of these, 53, covering 2,941 miles of line, were for authority to construct new lines or to extend existing lines, and 47 were for authority to abandon mileage aggregating 808 miles of line. The commission issued 57 certificates, of which some were on applications made during the preceding year, 27 covering 446 miles of new construction and 30 authorizing abandonment of 526 miles of line, and denied 11 applications, six covering 259 miles of new construction and five seeking authority to abandon 79 miles of line; 12 applications, seven covering the construction of 175 miles of line and five for authority to abandon 100 miles of line, were withdrawn.

In 24 cases hearings have been held for the commission by state commissions during the year, and in the majority of such cases it has followed the recommendations of the state authorities.

The question whether, under paragraphs 4 to 8, inclusive of section 5 of the interstate commerce act, two or more carriers may consolidate their properties either with or without the commission's approval, pending the adoption by it of a complete plan of consolidation, is undetermined * * *.

Paragraph 2 of section 5 authorizes the commission to approve the acquisition by one carrier of the control of one or more carriers in any manner not involving consolidation into a single system. Under this paragraph, 28 applications have been filed and 24 authorizations have been issued. Several important acquisitions have been brought about.

Preliminary to the determination and recovery of excess income, orders dated January 16 and March 16 were served on carriers requiring each to report the amount of its net railway operating income for the applicable period ended December 31, 1920, and the year 1921; the value of the railway property held for and used by it in the service of transportation; the net railway operating income in excess of six per cent of the value; and to remit to the secretary one-half of the excess income received, if any. Returns have been received from all large and many small carriers. Compliance with the orders is still the subject of correspondence with some of the small carriers.

Returns were filed by 739 carriers for the applicable period ended December 31, 1920, of which 17 reported an aggregate of \$737,567 net railway operating income in excess of six per cent of the value as reported. For 1921, returns were filed by 692 carriers, of which 21 reported an aggregate of \$696,944 in excess of six per cent. Of the carriers reporting excess income, seven reported an aggregate of \$50,475 and remitted one-half of the amount to be placed in the general railroad contingent fund. The commission is giving consideration to all returns which indicate that excess income was earned, with a view to early determination of the property values and ascertainment of the excess income recoverable.

Issuance of Securities.—The commission has received 195 applications under section 20a of the act and has authorized the issue of securities and the assumption of obligations and liabilities in respect of securities of others in an aggregate amount of \$889,719,710.23 plus 69,760,500 French francs. The report shows how much of each class and how much for new money, for refunding, etc.

Under paragraph 9 of section 20a, certificates of notification of the issue of notes maturing within two years, in the aggregate sum of \$54,141,584, were filed.

The Illinois Central and the Chesapeake & Ohio made applications for authority to issue preferred capital stock, the proceeds to be used in making additions and betterments. These applications constitute encouraging indications, the commission says, inasmuch as of late years it has been generally the practice to finance additions and betterments through sale of bonds carrying fixed charges. Both applications have been granted.

Interlocking Directorates.—The provision of section 20a of the act making it unlawful for any person to hold the position of officer or director of more than one carrier unless authorized by the commission became effective January 1, 1922. The evils which the statute was designed to prevent arose mainly from interlocking relationships between operating carriers. * * * The majority of instances in which authority has been denied have related to operating carriers, especially where there has been substantial competition for traffic between the carriers. The commission received 413 applications from individuals and 305 from carriers; 1 carrier application was wholly denied, and 408 individual applications and 308 carrier applications were granted in whole or in part, making a total of 727 applications, 415 individual and 312 carrier applicants, of which disposition was made.

Deficits Under Federal Control.—Claims have been filed for reimbursement by 344 carriers, under section 204, claiming approximately \$25,000,000. It is estimated that the amount to be certified on these claims will be approximately \$15,000,000, of which \$5,093,350 has been certified to date. Settlement has been effected with 83 roads and 17 cases

have been dismissed. The commission thinks that practically all of these claims will be settled during 1923.

Six Months' Guaranty for 1920.—As shown in the last annual report, 547 of the 667 carriers which had accepted the guaranty provision claimed an amount approximating \$818,000,000 by their returns filed in response to the order of October 18, 1920. An aggregate of approximately \$600,000,000 is claimed by 578 carriers which have filed returns conforming to the report and order of December 15, 1921. The commission finds no occasion, however, to make any change in its estimate of the total amount probably payable under the guaranty as stated in its last report, viz., \$536,000,000.

Settlements have been effected with 119 carriers and 75 cases have been dismissed. Practically all certificates issued since October 31, 1921, have been in settlement of claims. Of the amount estimated as necessary to make good the guaranty, viz., \$536,000,000, the commission has issued certificates in the aggregate amounts indicated below:

As advances under section 209.....	\$263,935,874
As partial payments under section 209	
as amended by section 212.....	168,970,412
In final settlement under section 209g	17,166,759
Total	\$450,073,045

Leaving an estimated amount still payable to the carriers under section 209 of \$85,926,954.

Loans.—Under the revolving fund, the time during which applications for loans might be made expired February 28, 1922. Loans from the fund subsequent to that date have been and will be confined to applications so made. The aggregate amount of loans requested in pending applications is large, but it is not thought that the total amount of loans yet to be made will be substantial. An appendix contains a revised statement of loans and of the present status of the revolving fund. Out of the original appropriation of \$300,000,000 the commission has held out \$40,000,000 to cover claims and judgments arising out of federal control as provided by the statute.

Bureaus of Accounts and Statistics

The accounting examinations in determining the amounts due carriers under sections 204 and 209 of the transportation act, 1920, have absorbed much of the time of the bureau, but this work has now decreased and the bureau has resumed in part the general examinations of carriers' accounts. Substantial progress has been made in investigation of the classes of depreciable property and the related percentages of depreciation which, under section 20, the commission is required to prescribe. A vast amount of research is required. A reduction in the appropriation of the bureau made it necessary to restrict the number of field examinations in connection with the work of checking carriers' claims under sections 204 and 209. This has delayed the settlement of these claims to some extent as well as the completion of the special accounting work required by these provisions of the law.

Additional emphasis has recently been put by the Bureau of Statistics upon analysis and research. The development of statistical standards for judging of the adequacy of maintenance, the formulation of index numbers to show the effect of changes in wages and prices of materials upon the cost of railway operations, the separation of terminal and line costs, and a history of changes in wage rates and working conditions from 1918 to 1922 are among the subjects to which attention has been given.

The principal analytical work that is being done is the comparative study of operating averages. An examination is being made of the differences in results obtained by various railroads operated under similar conditions. Although it is difficult to reach final conclusions as to the honesty,

economy, and efficiency of railway management from statistical tests in a central office, it is believed that a systematic effort to explain apparently abnormal results will prove of value.

Formal Docket

The formal complaints filed numbered 1,264, of which 1,127 were original complaints and 137 subnumbers, a decrease of 223 as compared with the previous period; hearings numbered 1,862, producing 227,037 pages of testimony, as compared with 1,616 hearings and 185,111 pages of testimony during the preceding period.

Bureau of Traffic

The commission's activities of an administrative character dealing with the various kinds of charges for transportation and transmission, including rules and regulations affecting those charges, are largely centered in this bureau. The current year has continued to be one of transition, readjustment, and reduction. The number of freight rate changes proposed and made was the greatest in the history of American railroads. In addition to the general reduction on July 1 of all freight rates not previously reduced since 1920, thousands of readjustments of rate relationships disturbed by general changes during war years have been made. Many individual situations have also been revised to remove inequalities and discriminations.

Efforts to settle rate controversies without litigation through correspondence and conferences with shippers and carriers have been continued with considerable success. Tariff publication is permitted upon less than 30 days' notice wherever the proposed rates appear likely to facilitate the free movement of commerce and correct improper adjustments. Due to the rapid and extensive rate changes of the past five years, the tariff situation, already complicated, has become more complex, and special efforts toward simplification of tariffs are being made in conjunction with committees representing carriers and shippers, it being the aim to lessen the expense of tariff publication and to facilitate ready determination by all concerned of the legal charges.

There were filed 135,433 tariff publications, and 2034 were tendered for filing and rejected because of failure to give the notice required by law. Those filed represent an increase of 31,685 over the preceding year. During June approximately 34,000 tariff publications comprising in the aggregate 375,397 pages were filed, most of them in compliance with the findings in Reduced Rates, 1922. Over 8,000 rate memoranda have been prepared for the commission's use or for the use of inquiring shippers, carriers, and other branches of the government, including the federal traffic board.

For violations of the interstate commerce act and related acts 27 indictments were returned, 16 informations filed, and 20 cases concluded. The indictments returned and informations filed charged the falsifying of records of common carriers, unlawful use of passes, false billing of interstate shipments, and frauds in connection with the issuance and use of bills of lading.

Bureau of Service

With a steady improvement in business conditions, there has been a corresponding increase in the demand for cars. This, with the strike of the miners and shopmen, made necessary the exercise of emergency powers. Continuous efforts have been made to improve the efficiency of transportation service by the rerouting of loaded cars over open routes, by urging the return of cars to the originating carriers and by correcting the specific deficiencies in transportation * * *.

Bureau of Safety

The work of the bureau of safety is reported in a separate document. During the fiscal year 1922, the bureau in-

vestigated 51 train accidents, involving a total of 117 persons killed and 953 persons injured. Two investigations pertaining to strength of materials are in progress, one having to do with the prevalence of transverse fissures in rails and the other concerning the endurance of chilled iron wheels under conditions of service. Plans of 179 [safety] devices were examined and opinion thereon transmitted to the proprietors. Of those examined, 23 possessed meritorious features but required further development or service tests to determine their practical utility and nine possessed merit as safety devices warranting some degree of commendation. In co-operation with the American Railway Association, observations of three automatic train-control devices in service have been made and tests of two other devices, of the magnetic-induction type, are now in progress.

Bureau of Locomotive Inspection

A summary of the fiscal year 1922, as compared with the fiscal year 1921, shows a decrease in this department of 48.4 per cent in the number killed, and 11.3 per cent in the number injured. Since 1912, the first year of the existence of the law, there has been a decrease in the number of accidents of 68.1 per cent, 72.5 per cent in the number of persons killed, and 68.3 per cent in the number of persons injured.

The report of the bureau does not mention the shop strike, but says that a comparison of all accidents and casualties during July, August and September, 1922, with those of July, August and September, 1921, shows 288 accidents, 10 persons killed, and 350 persons injured during the three months of 1922, and 152 accidents, 3 persons killed, and 173 persons injured during the corresponding period of 1921, increases for the 1922 period of 89.5, 233, and 102 per cent, respectively. Reports made to this bureau are checked with the accident reports made to the bureau of statistics. The figures for the three months of 1921 include the reports made to both bureaus, but the figures for the corresponding period of 1922 do not include the reports made to the bureau of statistics for August and September, which are not yet available for checking.

A comparison of the number of locomotives inspected during the months of July, August and September, 1921, with the corresponding period for 1922, shows:

	1922	1921
Number of locomotives inspected	16,380	16,722
Number found defective	11,231	7,963
Percentage inspected found defective	67	48
Written notices for repairs served	1,396	817
Total defects found	43,012	24,910

About 3,500 more locomotives were inspected than during the preceding year; but during that year the locomotive inspectors devoted an aggregate of 962 days to special work in connection with the transportation act, 1920, and the interstate commerce act, as against an aggregate of 200 days devoted to such special work in the ensuing fiscal year. On the other hand, during the fiscal year 1922 the inspectors spent a greater amount of time than usual at such points as they visited and at their headquarters, so as to reduce travel and subsistence charges. As a result they were unable to make inspections at 1,913 points where locomotives are housed or repaired.

Because of defective condition of locomotives and willful violation of lawful order of inspectors, suit was brought in the United States district court for the southeastern division of the eastern district of Missouri against one carrier and judgment was rendered on 20 counts in favor of the government. No formal appeal from the decision of any inspector was filed during the year.

Bureau of Valuation

Regarding the work of this bureau the report says in part: "We have reached the stage in valuation of the steam railroads where, except for rechecking, the inventorying of

roads recently constructed, and a few minor details, the original field work has been completed. Underlying reports are being issued in large numbers, and hearings and final arguments on protested tentative valuations are in progress. Of 287 tentative valuations served, 101 have become final through absence of protest. Full hearings upon protests have been had in 39 cases. Six cases have been partly heard and 33 are assigned for hearing before December 31, 1922. Final arguments have been had in three cases and 12 were set for argument in November. Issues raised by protestants in 19 cases have been submitted without argument.

"The act provides that valuation shall be kept up to date and we have taken steps to comply with that provision. We have completed the transfer of all forces and records of the bureau to the central office in Washington. The number of employees has been reduced to approximately 550, or about one-third of the maximum reached in 1918. Expenditures have been reduced from approximately \$3,000,000 per annum during the first few years, \$2,735,911 for the fiscal year 1920-21, and \$1,597,572 for the fiscal year 1921-22, to approximately \$1,300,000. This reduction has, in large part, been made possible by the termination of original field work.

"The following table shows data with respect to the underlying reports which have been completed and issued:

Section	Number of reports	Number of corporations	Miles of road	Per cent of total mileage
Accounting, as of Oct. 31, 1921	273	444	61,731	24.89
Accounting, as of Oct. 31, 1922	555	953	151,572	51.11
Engineering, as of Oct. 31, 1921	423	755	133,139	53.68
Engineering, as of Oct. 31, 1922	636	1,165	179,475	72.37
Land, as of Oct. 31, 1921	371	565	71,558	28.85
Land, as of Oct. 31, 1922	671	1,063	144,411	58.23

A like summary covering tentative valuation reports follows:

Date	Number of reports	Number of corporations	Miles of road	Per cent of total mileage
Oct. 31, 1921	151	193	24,493	9.86
Oct. 31, 1922	287	400	39,956	16.11

"These summaries do not adequately reflect the progress made. One feature of reorganization was the concentration of effort on production of reports covering the major steam railroad properties, particularly those of carriers whose gross revenues were \$25,000,000 or more per annum. Material progress has been made on these reports. Moreover, 58 tentative valuation reports, embracing 84 corporate properties and 12,939 miles of road, which were completed but not issued on October 31, 1922, are not included in the immediately preceding table.

"The emphasis laid upon valuation by the transportation act, 1920, has necessitated expediting the valuations of the steam railroads to meet increasing requirements.

"In our consideration of Reduced Rates, 1922, we had available underlying valuation reports covering 47.7 per cent of the total mileage. Analysis of the preceding summaries and of the schedule for the remaining months of 1922 indicates that for a similar survey of rates, fares, and charges the underlying reports available early in 1923 would cover approximately 75 per cent of the total mileage.

"Section 5 of the act provides that, in preparing and adopting the plan for consolidation of the railway properties into a limited number of systems, the grouping should be so arranged that the rates, as between competitive systems and as related to the values of the properties through which the service is rendered, shall be the same so far as practicable. Paragraph six of that section provides that the bonds and capital stock at par of the corporation which is to become the owner of the consolidated properties shall not exceed the value of the consolidated properties as determined by us, and makes it our duty to proceed immediately to the ascertainment of such value upon the filing of the application for consolidation. We have need also for valuation findings in regulation of security issues for existing companies and for the recapture of excess earnings. Requisitions for data

are made by other branches of the government. Local governments have called for valuation maps for use in planning development of industrial sites, flood control, port development, relocation of tracks, and planning of terminals.

"Although the activities and energies of the bureau have been mainly directed to the properties of steam railroads, all original field work on the properties of the Western Union and Postal Telegraph companies has been completed. The field work on the properties of the Pullman Company has been completed. No substantial amount of work on the telephone lines has yet been completed and no work has been done, except incidentally, on electric railway lines and express and pipe line properties."

Some Experimental Results With Quick Setting Concrete

DURING THE LAST meeting of the International Railway Congress at Rome, Italy, mention was made of the use of a quick setting concrete known as "Ciment Fondu." This is a French cement which has certain characteristics which are distinctly interesting. Predominant among these is its ability to attain a usable strength in a very short period of time. In June, 1922, the Boston Elevated Railroad Company obtained some samples of this product and conducted a series of tests, the results of which are given in the tabulations.

The material was tested at the laboratories of the company in comparison with three well-known brands of American cement and with the specifications of the American Society for Testing Materials for 1921. Three different mixes of ciment fondu were used. Figures were obtained on the amount passing through a No. 200 sieve, the time of initial set and final set, the strength of the French cement after 24 hours, the strength of all cements of the one-to-three mix after 7 and 28 days, and the results of a five-hour boiling test. Separate tests were made of the one-to-two and one-to-one mixes of ciment fondu. From the results it will be noted that the French cement obtained a strength in 24 hours greater than any of the standard cements did in 7 days and that the 7-day test of the French cement is greater by 15 per cent than the 28-day test of the others. On the 28-day test it showed a slight loss in strength compared with that at seven days. This cement, however, did not stand up well under the five-hour boiling test, as it cracked and scaled.

It was the intention of this road to secure some of this cement, if possible, for use during winter weather or for use in track work to shorten the time of from seven to ten days which is required with American cements before traffic can be turned on newly concreted or paved track. Communications with French manufacturers, however, indicate that the question of supply has not been stabilized and so far it has not been possible (at the time of this writing) to secure any of this material.

We are indebted to Edward Dana, general manager of the Boston Elevated, for information regarding these tests.

COMPARATIVE TESTS OF 1-3 MIXTURE

Make	Initial set	Final set	Per cent passing #200 sieve	24-hr. tensile	7-day tensile	28-day tensile
A. S. T. M....	*0.0 hr. 45 min.	†10 hr. 0 min.	78	...	#200	*300
"A" Brand....	2 hr. 40 min.	6 hr. 10 min.	85.2	...	348	377
"B" Brand....	2 hr. 50 min.	5 hr. 40 min.	85.4	...	271	300
"C" Brand....	3 hr. 20 min.	7 hr. 25 min.	85.0	...	282	356
French	3 hr. 5 min.	6 hr. 20 min.	96.4	376	423	...

*Not less than.
†Not more than.

COMPARATIVE STRENGTH OF DIFFERENT MIXES OF CIMENT FONDU

Mixture	24-hr. test	7-day	28-day	Per cent of strength
1 cement 3 sand.....	376 lb.	423 lb.	407 lb.	4.0
1 cement 2 sand.....	578 lb.	725 lb.	671 lb.	7.25
1 cement 1 sand.....	685 lb.	1,112 lb.	1,078 lb.	3.0

How To Get at the Inside of a Railroad Payroll

Suggesting a Method of Recapitulation and Comparison of Costs with Transportation Produced

By John Collins Owers

NOTWITHSTANDING the old proverb that familiarity breeds contempt, in these days no one concerned with railroad-ing permits himself lightly to regard the payrolls. On the contrary, indeed, each succeeding month these important documents seem to inspire still greater respect, especially in the hearts of those whose duty it is to direct operating affairs. This is going to continue, so that there can be no diminution of the effort to obtain still higher degrees of efficiency. There

and if they did, such study, however carefully done, cannot possibly result in the thorough comprehension that is really necessary. This will be found true even though the rolls contain the number of hours or miles for which each individual is paid, because neither hours of service nor miles properly indicates how much actual transportation the expense has produced, nor the cost per unit, without which it is impossible correctly to adjudge the expenditures.

Form A

RECAPITULATION OF TRANSPORTATION DEPARTMENT PAYROLLS - OLD COLONY DIVISION
Period Ending _____ and compared with Standard Wages & Labor Hours

Service Group	Current Rolls		Standard Rolls		Variation from Standard				Percentage	
	Hours	Wages	Hours	Wages	Increase Hrs.	Decrease Wages - Hrs.	Wages		Increase Hrs.	Decrease Wages - Hrs.
Superintendence:										
Supervision	416	\$ 260	448	\$ 255		\$ 5	32		1.9	7.2.
Dispatching Trains	336	341	352	358		17	16	5.		4.8
Station Service:										
Large Passenger	2881	1500	2880	1500	1	-	-			
* " Freight	9423	5200	8200	4526	1223	1674		15.	37.	
Other Stations	6338	3765	6328	3760	10	5		.1	.1	
Yard Service:										
Passenger	1295	1002	1012	783	283	219		28.	28.	
* Freight	8760	6705	6778	5242	1982	1453		29.	28.	
Train Operation:										
Passenger	6984	7110	6190	6301	794	809		13.	12.	
* Freight	7672	6461	7975	6716			303 \$255			3. 3.8
Tel & Tel Signal & Interlockers	2992	1828	2296	1405	696	413		3.	2.9	
Crossing Protection	12102	4143	12000	4114	102	29		.8	.7	
Miscellaneous Service:										
Draw Bridges	392	246	392	245	-	1				
* Non-Revenue Trains	210	763	210	714	-	49			4.9	
Other Employees	96	66	96	65	-	1				
Total Payroll	59897	39389	55157	34984	5091	4675	351 255			

* - Standard roll based on produced units; L.C.L. tonnage, Cars Received, Car Miles, Gross Ton Miles and Work Train Hours respectively.

STATISTICS OF OPERATION
Current Period Corresponding Period
Previous Year

	Previous Year		Inc.		Percentage	
					Inc.	Dec.
LCL Tons Reqd. Large Stations	8186	5988	2198		36.7	
Cost per Ton (Cents)	64.7	88.5		23.8		36.
Tons Handled per Labor Hour	.86	.54	.32		37.	
Cars Received All Yards	9059	8081	978		12.1	
Freight Switch Engine Hours	1086	1271		185		17.
Cars Handled per Engine Hour	8.8	6.4	2.4			
Cost per Car Received (Cents)	.71	1.13		.42		57
Passenger Train Miles	16204	16571		367		2.2
Cost per Train Mile (Cents)	.439	.44	-	-	-	-
Passenger Car Miles	53362	60795		7433		12.2
Cost per Car Mile (Cents)	.133	.13	-	-	-	-
Freight Train Miles	9800	9947		147		1.5
Cost per Train Mile (Cents)	.659	.918		.259		39.3
Gross Ton Miles	7975210	7354107	621103		8.	
Cost per 1000 G.T.M. (Cents)	.81	1.24		.43		53.
Loaded Freight Car Miles	162264	150306	11948		7.5	
Empty Freight Car Miles	84838	74919	9914		11.7	
Ratio Loaded to Total Car Miles	65.7	66.7				1.
Average Freight Train Load - East (Tons)	776	720	56		7.2	
" " " " - West "	853	799	54		6.4	

Form A—Recapitulation of Transportation Department Payrolls

will be no let-up in the insistent demand for still more ton-miles per dollar spent.

Obviously then, the thing necessary is to get the best possible understanding of the payrolls, to search their innermost recesses and expose the hidden secrets of non-productive costs, and lost motion wastes, which even on the most carefully supervised roads still sap at the tenderly nourished earnings and hinder achieving the so much desired net; and anything that offers to facilitate such an understanding, and assist in the better control of these expenditures is worthy of receiving thoughtful consideration.

Few railway officers can devote the time necessary really to study their payrolls as they come from the timekeepers.

Nevertheless, there is a way by which even the busiest officer can speedily delve to the innermost recesses of his payrolls, notwithstanding the bulk of the sheets or the volume of amount they may carry, and bring to light their most obscure secrets, whether of values received, or losses incurred. This may be done by recapitulating the rolls and relating the money that has been spent with the transportation that has been produced; a comparison of cost and accomplishment, which is really a very simple process, but one that is tremendously effective in obtaining a clear understanding of what the payrolls mean. To do this it is necessary only to group the classes of employees engaged in producing a given service, and obtain the total expense of performing their

work; compare this with a proper standard cost for the service rendered, and with the transportation results obtained.

For transportation department rolls a recapitulation of this sort would require consolidations of the amounts expended for the purpose of administration, or as it is termed in the classification of expenses, "Superintendence"; Station Oper-

becomes possible to ascertain whether the work has been done economically or otherwise.

These standards may be made by determining the required number of labor hours and amount of wages to produce a given unit of transportation, such as for passenger and freight train operation per car or ton-mile, or per ton of freight handled at stations, or per car handled in yards. Standards for the other groups may be based on actual requirements for operating purposes. Thus, for the passenger station or train control groups, no difficulty would be encountered in determining the actual wages expenses necessary to provide the service assigned for normal weekdays, Sundays and holidays, and such separate daily totals having been obtained, the normal requirements for each payroll period may be secured by multiplying the standard wage

Yard	CURRENT OPERATION					STANDARD OPERATION	
	Cars Received	Engines Hours	Wages	Cars per Eng. Hr.	Cost per Car Hand.	Cars per Eng. Hour	Cost per Car Hand.
Derby	1282	116	\$ 590	11.6	.40	13.5	.40
Waterloo	2561	164	1046	15.5	.50	12	.50
Kensington	701	80	525	8.8	.75	8.5	.77
Benton	2734	272	1782	10.	.65	8.5	.80
Brookville	1151	256	1574	4.4	1.49	8	1.60
Prescott	828	180	1046	4.6	1.21	4.5	1.25
TOTAL	9097	1068	6705	8.6	.71		

Station	CURRENT OPERATION					STANDARD OPERATION	
	Loc. Yards Received	Labor Hours	Wages	Yards per Labor Hr.	Cost per Ton	Yards per Labor Hour	Cost per Ton
Derby	754	1185	\$ 614	.64	.81	1.1	.64
Waterloo	1055	1688	895	.61	.866	.8	.64
Kensington	275	378	201	.74	.73	.95	.77
Benton	466	796	482	.71	.85	1.2	.69
Brookville	3512	2772	1554	1.2	.625	1.2	.69
Prescott	2461	2609	1454	1.1	.625	1.2	.69
TOTAL	6185	9467	5200	.86	.697		

Form B—Yard and Station Performance

ation, Yard Operation, Passenger and Freight Train Service, Train Control on Line of Road and Highway Crossing Protection, with still one other group to comprise the miscellaneous employees and services, such as non-revenue train operation, police protection, drawbridge operation, and so forth.

To produce the best results, some of these groups, such as "Superintendence" and "Station Service," may be subdivided; Superintendence, being separated as between "Supervision" and "Dispatching Trains," and "Station Service" divided into three sections; one, to include the employees at exclusive passenger stations; the second, those at the freight stations at which the forces fluctuate with the volume of traffic; and the third, to include all the other stations, the forces of which are governed by general operating characteristics.

By recapitulating the amounts of wages paid to the employees in group order as outlined, the total wage expense for a given service is obtained and may be compared with a

Payments made on account of working schedule	Amount
Safety Meetings	
Attending Court	
Qualifying on Road	\$12.64
Examinations	
Regular Relief Days	32.39
Saturday Half-day Relief	144.30
Holiday Relief	
Vacation and Sick Leave	17.83
Lunch Relief for Yardmen	261.46
Miscellaneous Causes	9.13
Payments produced by Operating Assignments or Conditions:	
Held away from home terminal	
Guarantee	
Men called out of turn or not used	
Yard men used to double trucks	71.53
Yard crews used for road service	81.00
Road crews switching in yards	19.88
Other switching arbitrations	67.48
Hoisting by road engine crews	12.44
Flagging and throwing switches by firemen	4.40
Piloting	
Terminal Delay	248.22
Deadheading men to furnish relief	498.95
TOTAL	\$976.70
Ratio to Total Payroll	2.5%

Form D—Report of Non-Productive Time Payments

expense by the number of weekdays, Sundays and holidays comprising the period under consideration and thus reach a standard total. This recapitulation (Form A) occupies only a letter size sheet, but it furnishes a complete picture of the payrolls, and tells a quick, positive story of the success of the operation, regardless of volume.

In case, however, a closer view of what has been done is

Terminals From To	No. Trains	Gross ton Miles	Loco. Miles	Trn. Hrs.	G.M. per Loco-Mile	Rating Loco-Mile	G.M. per Trn-Hr.	Ave's M.P.H.	Total Wages	Wages per Loco-Mile	Cost per Loco-Mile	Fuel Consumed Total Lbs.	Per 1000 G.T.M.
Derby Waterloo	13	1133709	1040	74	1090	1142	15320	14.1	\$561.04	34.7	31.8	198000	174
Waterloo Derby	13	879020	1040	80	895	1080	10720	12.7	371.84	35.7	42.2	104000	209
TOTAL	26	2012729	2080	154	985	1111	12902	12.3	732.88	35.2	36.4	362000	190
Benton Kensington	6	237272	258	22	920	1456	10765	11.7	134.46	52.1	56.7	48000	202
Kensington Benton	6	247686	258	22	960	1468	11258	11.7	134.46	52.1	54.2	53000	215
TOTAL	12	484958	516	44	940	1397	11022	11.7	268.92	52.1	55.4	101000	208
Prescott Brookville	6	529975	408	26	1299	2100	13928	14.6	180.08	39.2	30.2	96000	180
Brookville Prescott	6	106127	408	28	1240	1488	19466	15.7	160.08	39.2	31.6	92000	182
TOTAL	12	106127	816	54	1270	1794	19187	15.1	320.16	39.2	30.9	188000	181

Terminals	No. Trains	Train Miles	Gross Ton Miles	G.T.M. per Train Mile	Total Pro Rate	Wages 1/2 Rate	Wages Cost Per Trn. Mile	Fuel Consumed Total Lbs.	Per Trn. Mile
Derby Glendon	12	271	249026	919	\$200.40	\$29.96	.95	57000	210
Derby Benton	6	390	284801	730	157.68	5.56	.42	66800	171
Benton Derby	6	390	376589	966	157.68	23.30	.48	41240	106
Kensington Dilworth	6	294	189565	543	200.40	48.07	.98	86000	293
Dilworth Kensington	6	294	192030	653	200.40	38.42	.81	65000	221
Brookville Belt Line	20	260	176723	680	200.40	104.06	1.17	84000	323

Form C—Through and Local Freight Train Performance

previously determined standard of what the amount should be, and variations noted; also in conjunction with such groups as comprise the train, yard and freight station services, it is valuable to set up the number of miles run, cars or tons handled and the unit cost for each, so that it at once

needed, and it usually is, this sheet should be supplemented by a detail of such operations as readily lend themselves to analysis. For instance, the results obtained at individual yards and freight stations, and the movement of freight service, are particularly interesting, and because of the fact that

these services are largely controlled by the flow of traffic, the forces employed require frequent adjustments in order that a proper balance may be maintained. To provide this information, another sheet (Form B) has been devised, one section of which is devoted to the freight houses and the other to the yards. On this form, each point stands alone, and tells its own story of wage expenditures, tons of freight handled or number of cars received, and the cost per ton and per car, compared with previously determined standard costs; and for those who care for the further information, the number of tons handled per labor hour, or cars handled per switch engine hour may be given with their proper standards for purposes of comparison.

Passenger train service needs no special analysis beyond a comparison of the actual with the standard cost per car mile. A greater than normal variation from the standard is usually caused by overtime, deadheading, or other schedule allowances for which a special sheet is provided.

Although the cost of freight train service is properly comparable with a standard, there are so many elements likely to increase the expenses of operation that it is well to secure a still closer examination of the service, and for this purpose another sheet (Form C) is designed. On this is shown the performance of through and local trains separately by directions and by routes. Thus, if a division consists of a portion of main line and several branches, all the through eastbound trains on the main line between crew terminals are reported in one group, and conversely all the westbound through service between the same points. In separate groups are shown trains operated on the branch lines, whether the service is entirely operated from, or partly operated over, the main line. Thus, all through service between any two terminals will be reported upon a single line which shows the number of trains run, the locomotive miles, gross ton-miles, train hours and wages, with appropriate statistics to show the gross ton-miles and rating ton-miles per locomotive mile, the average speed, the gross tons per train hour, wages cost per locomotive mile, and per 1,000 gross ton-miles; and although fuel consumption is not payroll, the statement may be further extended to show the quantity of fuel used in total, and per 1,000 gross ton-miles, thereby making the report more complete as an operating statement.

On the same sheet, following the through service, is given the local or way freight performance, but not in such detail, as local service is not as readily susceptible to traffic conditions. Data in regard to this class of trains is, therefore, restricted to the number of trains run between specified terminals, the train miles, gross ton-miles, gross tons per train mile, wages cost divided between pro rata and time and one-half pay, the cost per train mile, and also, if the information is desired, the fuel consumption per train mile.

These statements bring out the payroll details in a pretty thorough manner, with the exception of one feature, which, by the way, too often serves as the woodpile for the payroll jinx. This is the element of schedule arbitrary and penalty payments, which unless guarded against may destroy the effect of otherwise good operation. These items run the gamut from passenger conductors' monthly guarantees to the penalty for calling a laborer in advance of his regular reporting hour. They are little foxes continually reaching up to spoil the good grapes; but before they can be stopped they must first be exposed, and their composition and cause brought to the surface. To do this, one more sheet has been added; but it is well worthy of careful study.

This one (Form D) is entitled "Report of Non-Productive Time Payments," because, although in most instances the allowances represent some service rendered, it is almost always the case that they are in the nature of penalties imposed on the company for failure to meet certain operating conditions with employees specially designated to perform the work required.

Thus, a road engine crew ordered to report 30 minutes earlier than the ordinary reporting hour of the run, for the purpose of heating passenger coaches with their locomotive, will not only be paid for the extra 30 minutes that they perform service, but an hour additional because they are doing work not properly that of an engine crew. There are, therefore, at least two hours of entirely non-productive time, and if conditions were such that the work could be assigned to an enginehouse employee, the expense of the 30 minutes actual time might also be avoided, a total of three hours time. Items of this character, unless brought into prominence through such a sheet, become buried in the general cost of service, and are completely lost sight of, but with a proper detail, the interested officer can save many a good dollar from disaster.

By means of the statements described, it is possible to obtain a quick, but thorough, comprehension, not only of what has been spent, and the way it has been distributed, but of what has been obtained in return from each of the groups of employees, and also to ascertain how near to standard the operations have been conducted.

In the "Recapitulation," the whole payroll is brought into view and compared with "budget," or other standard allotments, and any deviation from the allotment by any group can be at once noted. The second sheet brings up for review the individual freight house and transfer platforms, and the individual yards, and at once localizes any discrepancies which may have appeared on the "Recapitulation" data of freight handling, or yard expenses, and thus indicates unmistakably where corrective effort needs to be applied. The third sheet performs a similar service in connection with road freight operation and points immediately to the trains that are not being handled advantageously, so that whatever further investigation is necessary, may be applied directly to the runs needing attention, and the offending individuals brought into proper step.

The last sheet brings graphically to the surface all the little wastes and losses produced by schedule rules and inefficient operating conditions, such as deadheading, spare men to furnish relief, guarantee payments, switching arbitraries, time paid for but not worked, initial terminal delays, men called but not used, piloting, and the many other items of similar character that occur on every railroad, but which do not show on the payrolls or usual payroll statements, because the expense is lost in the total wages paid either to the individual, or to the class of employees being dealt with. Such items as these can often be avoided by a little extra foresight on the part of yardmasters, dispatchers, agents and others under whose direction the expense is incurred, and a statement of this character brings very forcibly to the forefront the need of all the foresight that can be brought to bear on the subject.

The preparation of these statements is relatively simple. The basic information is always available, and for the purpose of these sheets needs only to be brought into the proper combination and related with what has been produced as transportation within the same period.

By following the same general principles, analyses may be made of the payrolls of the mechanical and maintenance of way departments; the underlying idea being first to determine how much properly should have been spent during the payroll period, either by means of direct budgeting or by a process of time allotment per unit of production, and then to compare the actual expenditures with the standard. The statements may be made more interesting and valuable by the addition of columns showing the labor hours, as well as the money amounts, but the principle of bringing figures of expense into relationship with figures of production is the only true way by which to determine whether the expense has been wise or otherwise, and by which waste can be forestalled and good operation improved.

Essential Elements of the Human Problem*

"Scientific Management" Must Be Broadened—Employers as Well as Employees Need Education

By E. M. Herr

President of the Westinghouse Electric & Manufacturing Company

THE HUMAN PROBLEM in industry is not a new thing. During a thousand years of ancient times, for the most part before the Christian era, self-supporting and self-regulating organizations of workmen existed, which were remarkably similar to the trade unions of today. They were publicly acknowledged and legislative enactments made to control them. But they were weakened under the reigns of successive tyrants and finally lost with the Christian massacres of Diocletian in the early part of the fourth century and the subsequent feudalism of the dark and middle ages. The immediate cause of the destruction of these far-reaching labor organizations seems to have been the coveting of their wealth and power by the rulers of the day. * * * Constantine in A. D. 337 recognized 35 crafts—architects, brass and copper smiths, blacksmiths, carpenters, decorators, doctors, founders, fullers (cloth), furriers, glaziers, goldbeaters and gilders, goldsmiths, ivory workers, joiners, looking-glass workers, lapidaries, masons, marble cutters, plasterers of various kinds, pearl and filigree workers, potters, painters, plumbers, pavers, sculptors, silversmiths, stonecutters, statuaries, veterinaries, wagon makers, workers in mosaic. There were many strikes, usually called historically, when they attained sufficient proportions, "servile wars." The greatest and last of these was the uprising led by the gladiator Spartacus. Practically all ended disastrously.

And so the tide of the human element in industry has ebbed and flowed through the centuries. The so-called English (industrial) revolution in 1760 marked the beginning of the factory system and a departure from isolated craftsmanship under oppressive landlordism. * * * As late as 1820 less than five per cent of the American people lived in cities with a population of 8,000 and over. Today we are the greatest manufacturing nation in the world and over half of our population are city dwellers. In Massachusetts from 1800 to 1815 laborers received from 35 to 75 cents a day; carpenters and blacksmiths about \$1.00, and women employed as domestic servants their board and 50 cents a week. About 1825 occurred the first strike for a ten-hour day. "Sweatshop" methods had then begun. Local trade unions sprang up more or less intermittently early in the century, principally in the shoemakers' and printers' trades, both for mutual benefit and insurance, and for the reduction of working hours and the increase of wages, but it was not until the fifties that national organizations began to take effective form. These were pretty well shattered by the depression preceding the civil war and did not really come into being until the seventies and eighties.

[The speaker here reviewed the development of manufactures in this country, showing, from the census of 1920, that 40 per cent of the inhabitants support the whole, directly or indirectly.]

Principles Underlying the Human Problem

Let us now turn our attention more directly to this problem in an endeavor to ascertain at least some of the directions toward which its solution trends. The principal new thing about the problem is that industry is now conducted on a scale larger than ever known before. The problem has been

intensified by the greatly increased size of manufacturing establishments, by the concentration of population in cities having a large foreign element of often radical tendencies, and by the insecurity of employment, in which business cycles play a large part.

The underlying labor unrest and distrust are born of fear and misunderstanding—fear of coercion, unemployment and sickness—and a lack of mutual confidence as between employer and employed. There is more liberty and consideration for the workers than has ever been known before, and with it has come to the workers the greater vision of what they believe should belong to them in welfare and happiness. The social responsibility of management is being emphasized as never before. The awakened worker of today, more sensitive than his predecessors, intelligent, critical and perhaps irritable, must be convinced of the ability of management as well as its good faith, and in extreme cases even of the necessity of its being. It is said that democracy without management reverts to despotism on the mere ground of its inefficiency, and that the fundamental error in the recent Russian failure was confiscation of the factories and the expulsion of the managers, with the resultant breakdown of discipline and credit, on a false theory that labor alone creates wealth, whereas management, with credit and good faith, is of the first importance in the process of production. * * * It is the duty of the management of today to prove its "reason for being" and that the collective result of the combined efforts for managers and workers is a fine and great thing. If they can feel that this is the case, most men will toil cheerfully as subordinates. The management must convince employees by their experience that their treatment is fair and honest and without "bluff." It takes time to establish such confidence, and men will discover very quickly if the "boss" is not square. It must be established that labor and management are not foes.

The personnel department is now becoming common, but its intelligent extension still has far to go and it is regrettable that some companies have seen fit to curtail this activity in times of depression when they and their men need it most. These relations should not be handled and directed by the personnel department alone. The active heads and real managers are the ones on whom this responsibility must rest and who must handle it with their employees, not occasionally nor spasmodically but regularly and continuously, for work of this kind requires a great deal of time and patience. This effort on their part will gain the confidence of the employees and instil a spirit of co-operation throughout the organization, and it must be exerted on those directly in charge of the daily work of production. Anything less than this is futile and doomed to failure. Boards of directors must keep in mind this relation and work with the officers in determining policies which the managers can carry out without destroying valuable relations established only after long and patient work and almost impossible to renew.

Shop Representation Plans

One very large organization cites good results of five years' experience. * * * They find that if the men are free to make suggestions to the management they will not ask an outsider to do it for them. They find that workmen

*Abstract of an address delivered in New York City on Wednesday, December 6, before a joint session of the American Society of Mechanical Engineers and the American Economic Association.

are anxious to learn if given a chance, and they encourage the study in factory schools of the work of other departments. This broadens the employees' perspective and increases their interest in their own work.

It is credibly stated that at present there are in the United States more than 300,000 employees working under shop-representation plans created to give them a voice in the conduct of the shops in which they work, and that in by far the larger number of cases considerable progress has been made in establishing the most cordial relations between management and employees.

The crux of the industrial problem includes the question—How the just share of each party to industry is to be determined and how is each to be guaranteed its right to share progressively in increasing productivity, and be held also to the corresponding obligation to see losses proportionately shared? This obligation is often overlooked. Nominal wages have increased enormously, and it is safe to assert that real wages have also augmented despite the high cost of living and the fact that in the early days of industry few workers depended entirely upon their wage but were "found" many things which must now be purchased. * * * Manufacturers naturally wish to see their employees receive a wage, with reasonable working hours, which will support them in comfort. This, of course, is only possible when economic conditions will permit, as wages are not and cannot be based on the cost of living. If this condition is to obtain, the employee must live in accordance with his income and responsibilities and exercise frugality and care in his expenditures. Unless this is done, the real interest of the employer and employee will not be conserved because wages would be lifted to the point of throttling the industry.

Scientific Management

Scientific management—which is in fact little more than getting rid of confusion and perfecting adjustments, or in other words, good management—has entered largely in recent years into the human problem in industry. As helping to avoid undue strain on the part of the worker, and waste of time and materials, it should be of benefit to all concerned. It should remove the cause of any hostility to the broadest application of scientific knowledge of the conditions of maximum labor efficiency, to the gain of all parties to production. The scientific management which dealt in the earlier stage with individual output in an engineering way must now deal with men collectively and develop that scientific breadth of imagination and application which is becoming a vital necessity for the welfare of a modern civilized community. The psychology of labor, both in good and hard times, says Professor Commons, is fundamentally the psychology of a class of people whose life is insecure. The accident-compensation law has accomplished the first little step toward giving security to the job. It has shown that the only way to establish safety and security is by making it financially profitable to do so. And so shall we make it financially profitable to business to eliminate to a large extent the wage loss due to unemployment on account of sickness, on account of changes in seasons, and on account of fluctuations in business. Labor can never accomplish this result. The only possible accomplishment of it will come when the employer arranges to cover unemployment from sickness by some adequate form of insurance, to the expense of which the employee will contribute, indemnifying the employee against loss of employment from this cause (accident is now covered by our compensation law), and to lessen unemployment on account of the fluctuation in production because of changes in seasonal demand by the proper use of stocks of finished product so as to smooth out these fluctuations and also those due to abnormal variations in business.

Increased security and continuity of employment greatly lessen the human problem, but on account of lessened labor

turnover and uniformity of production they also reduce the cost of the product. Many progressive industrial organizations have gone far beyond the requirements of the accident compensation laws and the safety of the worker, incurring large expense in providing liberally for free life insurance, advantageous savings and loan opportunities, housing, service pensions, and education.

Education, Economic and Moral

Additional phases of helpful education might well be tried; for example, how to make repetitive work, in itself monotonous, interesting. A knowledge of the "why" of their product and the use of it and of related products of other departments has been found to materially broaden the operator's perspective. Then, too, workers can be encouraged to exercise their ingenuity in devising means to lighten and quicken their work and thereby incidentally increase their earnings. With shorter working hours there arises the question of what to do with idle time. Any one who investigates the use to which the average employee devotes his leisure undoubtedly will be convinced that such employee would be much better physically, mentally, and morally if he had less idle time, for it is generally used in loafing or in amusements which consume a material part of his earnings without corresponding benefits.

Work well done and with a knowledge of progress is a source of enjoyment with many, taking the place of the recreation others find necessary to their happiness, but education of both sexes in ways in which to use leisure time profitably yet pleasantly is needed. The young should be taught thrift, for a thrifty person will not uselessly waste his leisure time. The human problem in industry cannot but be largely affected by example. H. G. Wells speaks of the disturbing influence of "the obvious devotion of a large and growing proportion of the time and energy of the owning classes to pleasure and excitement. This spectacle of amusement and adventure affects the imagination of the working man. In making labor a part of every one's life and the whole of nobody's life lies the ultimate solution of our industrial difficulties."

The human problem in industry is very complex and can never be entirely solved. To measurably improve the feeling of confidence of the employee in the employer we must always and fundamentally be absolutely honest in our dealings; not only honest in our actions but also in our thoughts and intentions. Unpleasant facts and information necessary to be told to the employees should be given them as honestly as the others, and very promptly, so as to give them as much time as possible to adjust themselves to difficult or distressing conditions.

Finally, is it not clear that at least one direction of the solution of the problem is along educational lines? First, education of ourselves, the employers, to a more general understanding of the spiritual, personal, economic, and physical relations involved; and second, education to encourage and aid in every proper way the general and vocational training of the employees in thrift, especially the younger boys and girls, but also the mature but still impressionable group of young men and women who are keen to learn how their position in the workaday world can be improved. Example in this effort to educate and train the employee is especially effective. Such educational effort should establish confidence and encourage co-operation. It should also be directed so as to develop individuality in each workman and woman.

Let us therefore substitute the rule of reason and intelligence for force and so endeavor to restore in America the freedom of the individual, be he employer or employee—"that freedom which enables the young man to look into the future with confidence, knowing that the only limitations to his achievements are the boundaries of his intellect and the measure of his energy."

Fan Draft for Locomotives Discussed by A. S. M. E.

Proposed Construction Would Permit Application of Additional Equipment for Saving Fuel

THREE WIDELY different phases of locomotive design formed the topics of the papers presented at the Railroad Session of the annual meeting of the American Society of Mechanical Engineers held in New York on December 6. An extremely technical discussion of Stresses in Locomotive Frames was presented by R. E. Eksergian of the Baldwin Locomotive Works. George H. Hartman gave an analytical discussion of valves and valve gears in a

paper entitled "Steam Distribution in the Locomotive," and Frans H. C. Coppus brought out the advantages that might be derived by securing the draft in a locomotive through the use of turbine-driven fans in a paper on Mechanical Drafting of Locomotives. An abstract of Mr. Coppus' paper, which is especially noteworthy because of the possibility of effecting large fuel savings by the method which he proposes, is given below.

The Mechanical Drafting of Locomotives

By Frans H. C. Coppus

GENERALLY speaking, it is a simpler task to incorporate extensive improvements into the design of a new locomotive than to apply them to one already in operation. Though the author would be the last person to discourage the development of the locomotive along radical lines that would require a total reconstruction or rearrangement of the present locomotive power plant, he believes that more can be accomplished for the immediate future by adding to the existing locomotive equipment which is standard, in principle at least, in stationary and marine practice, and which does not necessitate extensive or costly alterations. The existing locomotives, 68,000 in this country alone, represent

and there is no reason why the locomotive power plant cannot be fitted out with the devices which have been responsible for the low cost of power generated in marine and stationary power plants. The problem is one of successful adaptation with reliability and moderate maintenance cost, within the present limitations of clearances and other conditions under which the locomotive must operate.

The logical course of development would be as follows: I mechanical induced draft, II undergrate forced draft, III condensing the exhaust steam, IV pumping the hot water from the tender through a waste-gas heater into the boiler, V operating condensing.

Mechanical Induced Draft

About ten years ago extensive experiments with mechanical induced draft were made on the Atchison, Topeka and Santa Fe, but they failed because of the "inability to secure a fan of sufficient capacity to properly handle the volume of gases" within the limitations of clearances.

It is doubtful if a fan without the introduction of an intensifying element can be built to overcome this difficulty. Only recently this new element has been brought out. It takes the form of stationary guide vanes held in a casing. The current of air leaving the propeller is radially subdivided by the individual vanes and taken up without shock. These guide vanes, which have a curvature increasing in the direction of the rotation of the propeller, concentrate the air current and give it a further acceleration, so that a large part of the pressure is produced and a large part of the end thrust taken up by them. This new fan or blower is very much smaller than a multi-blade centrifugal fan of the same capacity, both of commercial construction. Because of this fact the former can be made applicable to the locomotive and the latter not.

Fig. 1 shows the smokebox of a modern locomotive fitted out with a blower in the stack and the exhaust pipe and nozzle displaced by a plain exhaust pipe discharging the exhaust steam into the atmosphere. The guide-vane casing takes the place of the lower part of the stack.

A modification of the fan is necessary in order that it may function properly as an induced-draft blower for locomotives, keeping in mind especially, simplicity of construction, low maintenance cost and assurance that the bearings are kept cool and well lubricated at all times, as the success of the whole scheme hinges not only on the capability of the blower to create the desired draft in the smokebox, but also to stand up under it. A special design has been prepared in which the fan is driven by high pressure steam acting on a turbine wheel at the periphery of the propeller. The revolv-

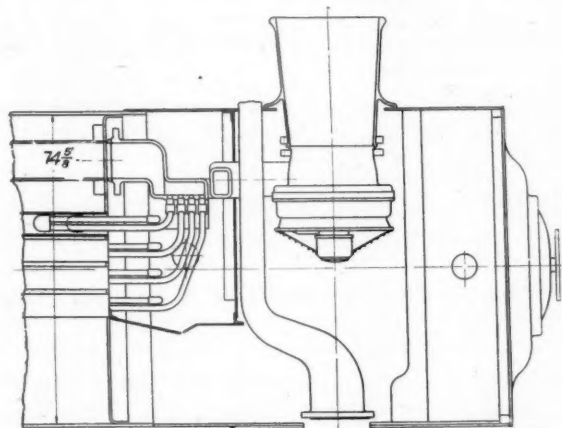


Fig. 1—Modified Form of Standard Front End with Induced Draft Fan

such a large investment that no matter how efficient a new locomotive may be built, it is out of the question to relegate them to the scrap heap, and they will be with us for many years to come.

In the treatment of this subject the author has therefore limited himself to the existing locomotive. The supporting data employed are based on modern steam locomotives equipped with superheater and brick arch and fed by means of a live-steam injector.

The use of the exhaust steam for drafting the locomotive makes the locomotive power plant differ in principle from the marine or stationary power plant. In the latter the boiler is an independent unit, while in the former the boiler and the engine are interdependent inasmuch as the exhaust of the engine creates the draft for the boiler and the shutting down of the engine renders the boiler inoperative. Separate the two by substituting mechanical draft for the exhaust jet

ing unit has oil cooled bearings and the end thrust is taken up by floating the shaft in oil under pressure.

Saving by Reduction of Back Pressure

One of the outstanding advantages of the use of an induced-draft fan instead of the exhaust jet for drafting the locomotive is the reduction of the back pressure in the cylinders. Prior to the experiments of the Atchison, Topeka and Santa Fe, a series of indicator cards taken from actual road tests of representative locomotives in various classes of service were prepared showing the initial pressure, mean effective pressure, back pressure, and indicated horsepower, and in addition the added mean effective pressure and indicated horsepower which could be obtained by reducing the back pressure to 4 lb. These showed increases in indicated horsepower ranging from 18 to 30 per cent for simple locomotives and an average of 53 per cent for a Mallet compound.

The author understands that since these tests were made the exhaust nozzles have been opened up considerably so that the back pressures have been greatly reduced. It would be idle to estimate what saving in fuel would result from

a strong bearing directly upon fuel economy and will greatly increase the overall boiler efficiency.

The heat loss due to combustible in cinders, estimated anywhere from 5 to 20 per cent depending largely on the class of service, is generally classed among the "unavoidable losses." With a fan the constant flow of air through the fuel bed, while gradually changing in intensity, will not lift or tear the fire, and this loss, therefore, can be practically entirely eliminated.

Undergrate Forced Draft

To put the ashpan of a locomotive under pressure might prove impractical for several reasons. To overcome this difficulty the author has constructed a grate with hollow bars taking the air from a wind box to which the forced-draft blower is connected.

The forced-draft blower is of the same general construction as the induced-draft blower. It operates, however, in a horizontal position with no excessive end thrust and handles cold air. Therefore, the special lubrication, end-thrust balancing, and cooling features are unnecessary.

While it is not impossible to operate a forced-draft blower

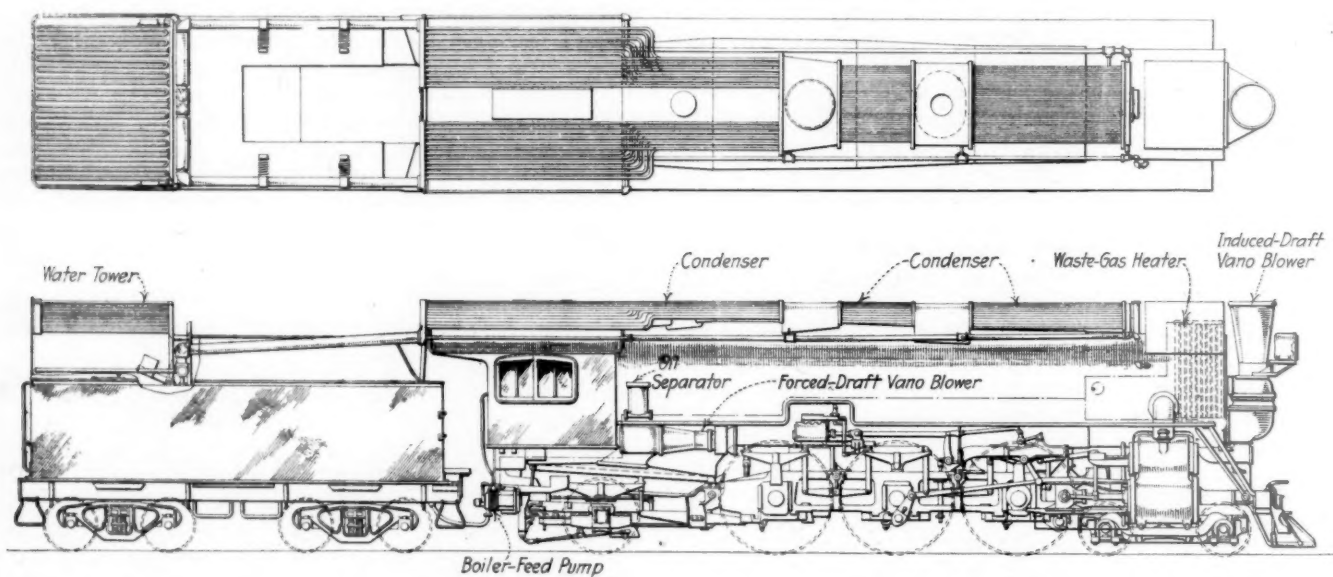


Fig. 2—Proposed General Arrangement of Locomotive with Induced and Forced Draft, Centrifugal Boiler Feed Pump, and Steam Condensing Apparatus

drafting locomotives mechanically due to reduction in back pressure. However, the field seems broad and the prospects bright for enormous savings along this line.

If the only effect of drafting locomotives mechanically was the elimination of the back pressure on the pistons, this would in itself be sufficient to deserve the keenest interest of those responsible for the economical operation of locomotives, but the subject embraces a great many other questions and vitally affects many features in connection with the economical generation and use of steam. Mechanical drafting gives the locomotive a degree of flexibility which it does not now possess.

The steam pressure may be picked up at will or allowed to drop, regardless of the amount of work the engine is doing.

This flexibility of draft makes it unnecessary to favor the engine at any time. The practice of favoring the engine on hills, often no doubt unavoidable under the present method of drafting, is not only wrong from the point of efficiency but cannot help but result in leaky tubes, increasing maintenance cost, and in shortening the life of the boiler.

The advantages of mechanical induced draft mentioned above largely relate to economy in the use of steam after it is once generated. In addition thereto mechanical draft has

in conjunction with an exhaust jet, it is much simpler and better to connect it up to an induced-draft fan. The speed of the two blowers could be so adjusted—and after once adjusted, maintained—that there would be an atmospheric pressure condition in the combustion chamber, if carried to a nicety. This is very common practice with stationary and marine boilers. With the fire door open there would be no inrush of cold air nor any outward leaking of flames or gases. Such a condition is called "balanced draft." It can be effected only by the use of a forced-draft blower in conjunction with an induced-draft blower, jet blower, or stack. While in a locomotive boiler there is no boiler setting through which air can filter in, the draft over the fire is so much stronger than in stationary practice and the fire door (on hand-fired coal burners) opened so much oftener, that even greater economies than in stationary practice should result from balanced draft.

With forced draft there is no reason why cheaper grades of fuel could not be utilized, which will not only result in economy in the cost of fuel, but also in the cost of handling and storage of coal.

The air space in the grates may also be very small so that no fuel will be lost in the ashpan, and at the same time the

grate will let sufficient air through on account of the air being delivered under pressure.

The forced-draft blower creates sufficient pressure to force the air through the fuel bed, leaving only the drawing of the gases through the boiler tubes to the induced-draft blower, and the latter may, therefore, be smaller or may be run at a lower speed than if used alone. For these various reasons it is easier and more efficient to use a balanced-draft system than merely induced draft.

Condensing the Exhaust Steam

When the locomotive is drafted mechanically all of the exhaust steam is available for whatever use can be made of it. Heretofore a small part of the exhaust steam has been used to heat the feedwater. This practice has been quite common in Europe but has been only recently successfully carried out on this continent and to only a very limited extent, less than one per cent of American locomotives being thus equipped. The exhaust-steam feedwater heaters have been constructed on the principle of imparting to the water the maximum amount of heat with the minimum amount of exhaust steam because the latter was needed to draft the locomotive. With mechanical draft, the more steam used for heating the feedwater the better, as the more water will be

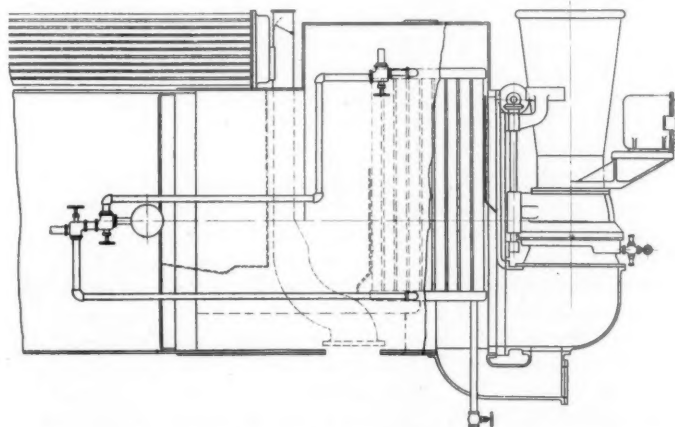


Fig. 3—Modified Front End, Equipped with Induced Draft Fan and Feed-Water Heater

saved. Railroad men fully appreciate the economy in time and fuel due to the saving of water, especially in freight service, and incidentally the not negligible economy in boiler repairs in bad-water districts.

Pumping the Hot Water from the Tender

Through a Waste-Gas Heater into the Boiler

The exhaust steam, or as much of it as can be condensed, may be passed through a condenser on top of the locomotive running all the way back to the tender (see Fig. 2). The remainder may be allowed to pass to the air free for the time being. Such an arrangement affords a large cooling surface and the amount of water which can be saved without even attempting to run the engine condensing will be much larger than the amount saved by merely heating the feedwater by means of an efficient heater. The cooling surface may be made more effective by directing over it a current of air created by the speed of the locomotive with or without the assistance of the undergrate-draft blower. It is a simple matter to encase the condenser, provide it with louvers to catch the air, and connect it to the blower inlet by means of a duct. This would have the additional advantage of reclaiming part of the latent heat of the exhaust and supplying the fuel bed with preheated air. A cooling tower located on the back of the tender would further assist materially in condensing the exhaust.

It needs no explanation that with all the exhaust steam available it will be a simple matter to keep the water in the tender at any temperature desired up to the boiling point. This would convert the tender practically into an open heater. Instead of the injector a boiler-feed pump, preferably of the centrifugal type, installed in duplicate, will feed the water through a waste-gas heater into the boiler. The pumps will be located under the cab of the locomotive, so that there will be a sufficient head of water from the tender. Waste-gas heaters have been so far a distinct failure largely on account of the prerequisite that the heater should not interfere with the draft, because if it does the economy derived from its use would be nullified by an increase in back pressure.

The author has constructed a waste-gas heater which can be placed in the front end with slight alterations thereto, and which has a heating surface of over 1,000 sq. ft. By extending the front end this heating surface could be increased if necessary.

From the point of efficiency it may be considered that at the present time the water is put in locomotive boilers at an average temperature of 60 deg. F. the year round. If, instead of an injector, a pump is used the exhaust steam and the waste gases—which comprise the two largest items of waste energy in present locomotive operation—can heat the water from 60 deg. to 300 deg. With an absolute steam pressure of 200 lb. this is an undisputed saving in fuel of a little over 20 per cent.

Operating Condensing

Mechanical drafting of locomotives makes it possible to run locomotives condensing. It can be accomplished without material change in their construction outside of an enlarged and modified tender. This, however, will come later after the steam consumption of the locomotive has been made as small as possible, which will, in itself, make condensing operation easier.

General Arrangement

Fig. 1 shows the induced-draft blower located in the stack. This is naturally the logical first step in the development of an induced-draft system for a locomotive, but a blower in such a position is not readily accessible. Practical considerations led the author to place the blower outside of the smokebox. A diagram showing the general arrangement of exhaust pipe, waste-gas heater, and induced-draft blower is shown in Fig. 3 and will need no further explanation.

Means are provided whereby the guide-vane casing can be quickly separated from the fan casing, giving access to both the fan and the guide vanes for cleaning. Automatic adjustment is provided for maintaining the proper relation between the pressure at the grate bars caused by the forced-draft blower and the draft at the front end caused by the induced-draft blower. The speed of the fans is controlled to keep the boiler pressure from varying more than 10 lb.

The induced-draft blower not only furnishes the necessary draft but also controls the amount of fuel used and the water fed into the boiler. Proper provision is made whereby the steam supply to the different apparatus is partly shut off when the engine is standing, or drifting.

Conclusion

Whatever the saving in fuel will be, due to the elimination of back pressure, the heating of the feedwater, the stopping of the waste of unburned coal through the stack and through the grate, the elimination of cold air over the fire, etc., it is going to reduce just that much the amount of coal that is being fired, or the rate of combustion, which in itself greatly increases the boiler efficiency.

A rate of combustion of 100 lb. shows a boiler efficiency of 65 per cent. Reducing this rate of combustion to 60 lb., directly and indirectly by means of mechanical drafting,

which is not impossible, the corresponding boiler efficiency would be 74.2 per cent, or a saving of 9.2 per cent.

In a paper presented by John E. Muhlfeld, at the annual meeting of the American Society of Mechanical Engineers, December, 1919, entitled Scientific Development of the Steam Locomotive, the following heat balance is shown as representative of locomotives worked at from 25 to 35 per cent cut-off and hand-fired:

	Per cent
Heat absorbed by boiler.....	55
Heat absorbed by superheater.....	10
Heat loss in smokebox gases.....	14
Heat loss in cinders.....	8
Heat loss in vapors of combustion.....	4
Heat loss in combustible in ash.....	3
Heat loss in carbon monoxide.....	2
Heat loss in radiation and unaccounted for.....	4
Total.....	100

Under the same conditions but with mechanical draft and the waste-gas heater as described by the author, the heat balance should be approximately as follows:

	Per cent
Heat absorbed by boiler and waste-gas heater.....	74
Heat absorbed by superheater.....	10
Heat loss in smokebox gases.....	5
Heat loss in cinders.....	2
Heat loss in vapors of combustion.....	4
Heat loss in combustible in ash.....	1
Heat loss in radiation and unaccounted for.....	4
Total.....	100

In conclusion, it may be stated that mechanical drafting of locomotives is imperative for the following reasons:

(a) It reduces the back pressure to a minimum, effecting a saving in fuel of from 10 to 30 per cent; or increasing the power of the locomotive in the same degree, especially as speed increases, therefore adding to the hauling capacity or speed of fast freight and passenger engines, producing additional revenue tonnage and also eliminating or lessening the necessity for double-heading.

(b) It produces an engine that is free-steaming under the most adverse conditions and with all grades of fuel, decreasing liability of delay and saving time and money now spent in changing nozzle tips and experimenting with them.

(c) It keeps the steam pressure constant, regardless of load, saving steam now wasted every time the safety valve pops and making it unnecessary to favor the engine at any time, thereby saving fuel, avoiding unequal stresses in the boiler and resulting in saving in maintenance cost.

(d) It increases the efficiency of the boiler and grate by effecting better combustion and eliminating the waste of unburned fuel through the stack and in the ashpan—and incidentally stopping the inrush of cold air every time the fire door is opened—thereby avoiding sudden cooling of crown sheet and tubes.

(e) It makes possible the use of cheaper grades of fuel, resulting in large economies and in simplifying the handling and storage of coal.

(f) It eliminates the smoke nuisance in terminals and freight yards.

(g) It makes it possible to condense from 25 to 95 per cent of the exhaust steam, depending upon the season of the year and the kind of condensing apparatus used, resulting in economy in the cost of water and of maintenance.

(h) It effects a saving in fuel of 20 per cent by making it possible to preheat the feedwater from 60 to 300 deg. F., and incidentally greatly decreases the cost of maintenance by eliminating unequal stresses caused at present by the great difference in temperatures between the lower and upper portions of the boiler.

(i) It reduces the rate of combustion, thereby increasing the boiler efficiency.

(j) It lessens the work of both engineer and fireman, thereby necessarily increasing their efficiency.

Discussion

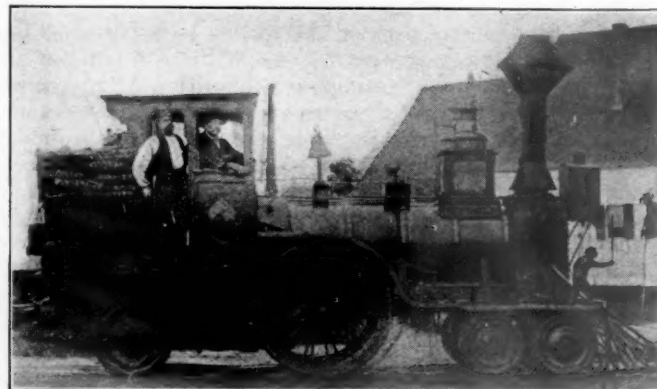
William Elmer (Pennsylvania System) questioned the desirability of making the boiler output independent of the locomotive steam consumption. To show the great amount of air that it would be necessary to handle with a fan if locomotives were drafted mechanically, he presented figures from test plant trials of a Pacific type locomotive with 27 in. by 28 in. cylinders. This locomotive developed over 3,000 hp., evaporated 65,000 lb. of water and burned 12,000 lb. of coal an hour. The draft in the front end was as much as 18 in. of water. It is difficult to determine the amount of air required to burn each pound of coal, but J. T. Anthony states it varies from 12.7 to 8.7 lb. Assuming an average value of 10 lb. of coal and assuming further that a locomotive consumes 10,000 lb. of fuel an hour, the fan would be required to handle 100,000 lb. of air per hour. This would amount to 1,300,000 cu. ft. per hour at atmospheric temperature, and at a temperature of 600 deg., which might be expected in the front end, the volume would be double.

Robert Rennie (American Locomotive Company) stated that a locomotive with 55 sq. ft. of grate area working at full capacity should have a fan capacity of at least 48,000 cu. ft. per min. at atmospheric pressure. Cooling the air before it is admitted to the fan would make mechanical drafting less difficult, but the additional resistance due to any appliance for recovering heat from the waste gases is a disadvantage. He considered that the method of reclaiming water from the exhaust steam would hardly be practical because of the enormous cooling surface required.

W. L. Bean (N. Y., N. H. & H.) called attention to the magnitude of the fuel problem on the railroads and pointed out the desirability of trying such designs as proposed by Mr. Cippus because of the possibility for large savings. He stated that fan efficiency and capacity had been greatly improved since the last trials of mechanical draft were conducted and urged early application of the design put forward after careful engineering investigation had been made.

Dr. W. F. M. Goss discussed mechanical drafting of locomotives by means of a turbo-exhauster. He called attention to the objection of the operation of locomotives in cities on account of the noise and smoke and outlined how these could be overcome by the turbo-exhauster. He stated that the required draft could be obtained with from 40 to 50 per cent of the existing back pressure, and in conclusion expressed the opinion that mechanical drafting had so many advantages that it is likely to come into use soon on the railroads.

In closing the discussion, Mr. Cippus stated that his proposal had in some cases been misunderstood due to failure to consider all the conditions set forth in the paper. His conclusions had been based on careful study and he felt certain that they were practical.



Courtesy Railway & Locomotive Historical Society

The "Uncle Tom," Fitchburg & Worcester Railroad (Massachusetts) 1850-60

The Relation of Syphilis to Railway Accidents

Call for Thorough Examination of New Men and Men Whose Errors Have Caused Collisions

By Archibald E. Chace, A.B., M.D., F.A.C.S. and George A. Hays, M.D.*

DURING 1920 there were 10,110 collisions on steam railroads in the United States, of which 8,246 or 82 per cent were due to "man failure." In other classes of railroad accidents, the role played by the human element as distinct from the "equipment factor," with the exception of derailments, is excessive.

There are many reasons, of which the most important are three. Those of us who are railroad surgeons have had a very narrow and completely frozen attitude toward our possible usefulness in the industry of transportation. From this has resulted, if not complacent indifference, at least a very skeptical attitude by the majority of railroad officers toward the possibility of overcoming man failure accidents. The engineer, both civil and mechanical, may have been more aggressive, for he had something to sell unhindered by professional strictures against advertising, and he certainly had an article which the practical business executive could test with his own senses—a gong which he could hear, a signal device which he could see and operate, a rail section or a switch which he could test in service—not an unseen almost unthinkable, entirely intangible normal human sensory-motor mechanism, and the maze of association centers which we must (and in time will) sell to the railroads of this country. To these two causes must be added a third: the antagonism of union labor.

Before the war teachers, professors and psychologists had accumulated some store of knowledge about the testing of brain function, especially of the student. Before, and in the main during, the war, psychologists gathered a large body of statistics both in industry and in the army. Since then they have with some success applied this information to the difficult task of fitting a man to his job. They feel, with some excuse, that a psychologist only is qualified to do this. They forget that an applicant for a job may have a brain perfectly suited and pulmonary tuberculosis. When we prove to railroad executives that we know the functions of the controlling organ in man, as well as we know other human functions, and then patiently study and experiment until we have a plastic, but never a crystallized, method of procedure, then can we be of real service in putting the right man in the right job and keeping him there, with safety to himself and others. This is one of the tasks of the railway surgeon, and the broad field of which the present inquiry is but a small part.

In the healthy man the capacity for judgment and the time of motor response, which are two of the essential elements in railroading, may be assumed to be fairly constant in any one individual under like conditions. In the diseased individual, whether the toxemia of intestinal stasis or an acute infectious disease be the variant, sudden and wide departure from this normal line of judgment and reaction time may be expected. This condition is so well known that proof or further consideration seems unnecessary.

So the study of, and elimination of, diseased individuals from hazardous occupations must be accomplished if we are to greatly lessen the man-failure accidents on our railroads. This as a rule means the removal of the disease, not of the man. To begin with a disease which would likely prove very important, we have undertaken to determine what the relation

is between syphilis and man-failure accidents. Let us first examine, however, the general problem.

The Great Cost of Accidents

Railway accidents are usually classified as train accidents, train service accidents, and industrial (or shop and maintenance of way) accidents. These three grand divisions are then sub-divided minutely. Of the 126 sub-divisions of these headings, the two containing by far the highest number of accidents (involve almost entirely exercise of judgment, failure to control by hand brakes and improper handling of cars or locomotives in switching or coupling—giving 2,684 train accidents out of a total of 10,757 man-failures in 1920).

After considering such "causes" of railway accidents, however valuable they may be to railway executives, one is impressed with the undoubted fact that they are not causes at all. They are but visible and outward manifestations of the real cause. We get a little nearer when we discover a lack of judgment, a slow motor response, inattention or wilful misconduct. We are still closer when we find these conditions caused by fatigue, a man with a mental age of eight in a position requiring a mental age of 14; a man dazed by the toxemia of chronic nephritis; an engineer with glasses raising his vision from 20/80 to 20/20 and the one and only pair of glasses in his coat pocket at home; or some acute toxemia or brain syphilis. Such data would give us the real causes of man-failure accidents on railroads, and the means of prevention.

Would it pay the railroads to look into the real causes of man-failure accidents? The first item of the answer is the cost of such accidents now. In 1920 the cost of replacing cars and locomotives damaged by *train accidents alone for which employees were held responsible*, was roughly \$10,200,000; and 330 persons were killed and 4,176 injured. In train service accidents there were 3,793 killed and 53,286 injured. In non-train accidents there were 439 killed and 100,519 injured. So we have an approximate total of 4,562 killed and 157,981 injured in one year. Taking the average cost of a death to a railway at \$2,000 and \$100 for each injury, and adding the equipment damages, we arrive at a total cost for one year of about \$35,000,000. If this could be reduced even one-third by strict medical supervision alone—and there are grounds for the belief that it can—the saving would be between 11 and 12 millions of dollars a year, less a small additional cost over the present system. Of course, this calculation does not consider the trend of public policy involved. If then a great saving is possible, and public policy demands the lessened risk to human life, then why haven't the railways long since introduced strict medical supervision? The answer, we believe, is two-fold; firstly, the saving has not yet been fully demonstrated; secondly, the labor unions are opposed to it. What the railway surgeons seek is the opportunity to demonstrate.

Syphilis Among Railroad Men

Now let us consider syphilis in this relation. We are familiar with the ordinary manifestations of this disease. Even in the secondary stage it is now evident that the central nervous system is involved, and the toxemia may be so great as to cause complete incapacity for any occupation. From

*Dr. Chace is chief surgeon of the St. Louis-South Western, and Dr. Hays is attending dermatologist at the company's hospital at Texarkana.

this virulent type to the milder affections of judgment and sensory motor response, we may include all cases of secondary syphilis. For this reason we believe such cases should be taken out of the service and given intensive treatment. When proper examination shows them to be Wassermann negative, spinal fluid negative to globulin and colloidal gold test and cell count negative, and normal in brain and nerve function as ascertained by thorough neurological examination, they may be returned to work with the proviso that they continue treatment and are re-examined at first once a month, later every two to six months, for ten years.

In the tertiary stage, so called, we may expect to meet a wide variety of conditions from aortic heart disease to paresis. The early detection of these conditions, and a change to a proper non-hazardous occupation under treatment is extremely important if we expect to exclude syphilis as a factor in railway accidents.

Knowing then the possibilities of syphilis, the next inquiry is whether or not it exists among railway men to an extent sufficient to cause concern. Evidently, if railroad men have very little syphilis, then our inquiry is of small importance. Our hospital statistics show that in the South, at least, more than six per cent of railroad men seek treatment *each year* with a venereal disease, of which half are luetic. Believing that state insane hospitals might throw some light on the subject, letters of inquiry were sent out to about 80 institutions, and so far we have 53 answers. These figures show that of all paretics, railroad men form roughly five per cent, and of these about 80 per cent are from train crews and dispatchers.

The Mayo Clinic has published its statistics of syphilis in regard to occupation. These show that nearly eight railroad men are affected to one farmer, three railroad men to one business man, and two railroad employees to one laborer. "Men of these types (train, yard and engine service), aside from the responsibilities which devolve on them, form an especially interesting occupational group, medically speaking, because they have for years been ostensibly under medical surveillance, and their health record is, therefore, in a sense indicative of the efficiency of the industrial medical practice of the past. To find so high a percentage of the men infected with a grave disease, capable of seriously impairing their efficiency and thus of bringing discredit on railroad administration and danger to the public, is a matter for concern. To find so much of the infection easily recognizable and yet apparently unrecognized, suggests the *need for a modern revision of methods and conceptions in medical supervision.*"

Now if 4.2 per cent of all men have syphilis evident without a Wassermann, and if three per cent of railroad men are infected each year (our own statistics), it follows that the Mayo Clinic ratios are not too high as against railroad men.

Wrecks Due to Defective Health

The next inquiry was directed to determine if the records of railroads showed any wrecks caused by syphilis. We have answers from the chief surgeons or claim departments of 47 railroads. These clearly demonstrate that nothing has been done to determine the causes of wrecks.

The American College of Surgeons was next asked for assistance in unearthing railroad wrecks caused by syphilis. From the literature, there has been reported the following situation:

Expressions of belief in the important role played by syphilis as a factor in serious railway accidents are widespread. A bibliography of 22 titles is appended (appendix A). This belief is shared by a number of railway chief surgeons.

Incidents of near-wrecks when dangerous neurosyphilitics were found handling trains, or who became violently insane soon after exercising such responsibility, are also numerous. For example: (†) A conductor had vertigo and blunted memory while running fast train; another conductor (1) had

"hemiparesis," amnesia, diplopia, etc., and had to be taken from his train; (2) a fireman became unconscious; (2) an engineer came to a hospital able to obey commands, but unable to understand what he was doing; (2) an engineer in a hospital insisted upon going back to work because "the president of the road had written" wanting him back, but this man had attacks of partial paralysis; there are several cases of forgetfulness while on duty, and the insane hospitals furnish many instances of violent insanity following closely upon duty in hazardous railroad occupations. One engineer ran a fast train in the East, two hours after completing the run tried to kill his wife, and died in a short time from brain syphilis. All of the above near-accidents, which could be multiplied many times, were due to syphilis, and most of them reported by physicians not in railroad work.

Actual wrecks caused by syphilis: The Baker Bridge accident on the Boston & Maine in 1905 appears to us undoubtedly due to syphilis, and the presumption is raised that many if not most wrecks, and other accidents, caused by an employee wilfully disregarding usual precautions are due to syphilis. There are many such accidents in medical literature; for example, conductors who confused orders, engineers who became paralyzed, unconscious or died suddenly in the cab or ran past signals; trainmen who fell from moving cars. Large damages are paid by railroads for "cord injuries" due to syphilis and actual insanity on duty. There are men in responsible positions who are suffering from brain and cord syphilis. Three cases of beginning insanity due to syphilis were discovered on one railroad. It cannot be doubted that a thorough examination would disclose many more.

Remedies

Granted that syphilis is an important factor in railway accidents, what are we going to do about it?

(1) Treat syphilis in railway hospitals and when feasible at emergency stations, because—

- (a) We can get hold of the cases more often and quicker when free treatment is given and a square deal is assured.
- (b) The community and other employees can be protected by quarantine in no other way.
- (c) The patient can get efficient treatment.
- (d) Laboratory facilities for early and prompt diagnosis and to check treatment are available.

(2) Teach the early diagnosis of neurosyphilis, by neurologic examination before the laboratory can tell us anything, and before definite tissue destruction has taken place so that neurosyphilis can be cured, not being misled by the lack of primary and secondary manifestations of the neurotrophic spirochete.

(3) When a man-failure accident occurs, the men involved should be very carefully examined, to determine every possible physical defect which might have had a bearing on the accident. This evidence should then be reviewed in conjunc-

† These numbers refer to the bibliography.

*Bibliography—Appendix—A

1. Burnett, S. G. Med. Herald, 1914, 33, p. 14-20.
2. Camp, C. D. J. A. M. A. 1913, 61, p. 655-659.
3. London Correspondent. J. A. M. A., 1908, 51 p. 928.
4. Diller, T. Penn. M. J., 1912-13, 16, p. 805-807.
5. Dunton, W. B. J. A. M. A., 1909, 52, p. 2098-2100.
6. Decker, Hon. Tracy C. (Privileged Communications). J. A. M. A., 1896, 26 p. 1065-1067.
7. Hicks, C. Ry. Surgeon J., 1904-1905, 11, p. 19.
8. Hughes, C. H. Alienist and Neurologist, 1908, 29.
9. Johnson, E. J. Ry. Surgeon J., 1905, 12, p. 264-269.
10. Knapp, P. C. Boston M. & S. J., 1908, 158, p. 187-189. (See the Committee's Report).
11. Moore, J. T. Texas State J. M., 1906-7, 2, p. 292-294.
12. Fagan, J. O. Atlantic Monthly, 1908, 101, p. 80-87. Am. J. Insanity, 1909, 65, p. 541-542.
13. Priestley, J. P. Ry. Surgeon J., 1914-1915, 21, p. 301-302.
14. Pyle, J. L. Ry. Surgeon J., 1918-1920, 25, p. 199-201.
15. Committee Report. J. New and Mant. Dis., 1911, 38, p. 227-231.
16. Rogers, E. B. Ry. Surgeon J., 1913-1914, 20, p. 350-354.
17. Stokes & Brehmer. J. Ind. Hygiene, 1920, 1, p. 419-427.
18. Thomas, C. D. Ry. Surgeon J., 1908-1909, 15, p. 404-406.
19. Oliver, E. A. J. Ind. Hygiene, Sept., 1919.
20. Everett, R. H. J. Ind. Hygiene, Sept., 1920.
21. Chace, A. E. J. Ind. Hygiene, Oct. 1920, p. 224.
22. 37th Annual Report. Mass. Board of Railroad Commissioners.

tion with the facts brought out at the investigation of the accident.

(4) Reorganization of the medical examination of applicants, and periodic re-examination of employees to meet modern standards.

It may reasonably be concluded from the above facts that syphilis alone would warrant a different viewpoint in demonstrating the causes of railway wrecks. Add to this disease all the other physical afflictions, congenital and acquired, which could have a bearing, and it would seem that we have sufficient reasons for a complete reorganization of our method of examining applicants for employment; for maintaining the physical condition of employees and for the more thorough investigation of railway accidents.

Small Vertical-Type Air Compressors

THE INGERSOLL-RAND COMPANY, New York, announces a new line of small vertical air compressors known as Type Fifteen. In addition to plain belt drive, each of the four sizes is built as a self-contained electric motor outfit, driven through a pinion and internal gears, or by employing a short belt drive arrangement. The compressing end and electric motor of both gear and short belt-drive units are furnished mounted on a common sub-base, so that they are in no way dependent upon the foundation for correct alignment.

Several noteworthy features of construction have been incorporated, of which the constant-level lubrication system is the most important. Others include the constant speed unloader for plain belt-drive machines; the centrifugal unloader

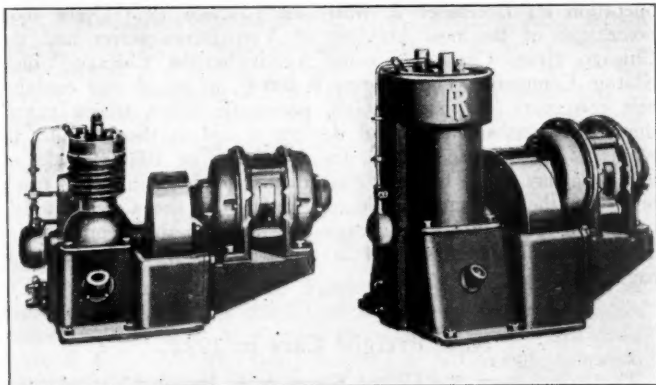
pan. A projecting stem on the connecting rod dips into this pan and distributes just a sufficient quantity of oil for proper lubrication.

The constant speed unloader controls the unloading of the compressor by automatically opening the inlet valve when the receiver pressure rises above that at which the unloader is set to operate. When the receiver pressure has fallen a predetermined amount, the unloader automatically releases the inlet valve and allows the compressor to return to work and thus build up the receiver pressure again.

The centrifugal unloader allows the compressor to start under "no load" such as is essential when automatic start and stop control is used, and permits the electric driving motor to come up to full speed before the load is thrown on automatically. This unloader accomplishes its purpose by holding the inlet valve open until the motor has reached full speed.

The smallest size is built with either ribbed cylinder for air cooling, where the service is intermittent, or a water-jacketed cylinder of the reservoir type for constant service. All other sizes are built with the water jacket of the reservoir type. The belt and electrically-driven machines include the 3 in. by 3 in. air-cooled, the 3 in. by 3 in., the 3½ in. by 4 in. and the 4½ in. by 5 in. water reservoir cooled machines.

THE DAYLIGHT LAMP TYPE of signal gives a more arresting signal than a semaphore and is visible at a longer range in adverse conditions. This is from the report of Major G. L. Hall, inspecting officer of the British Ministry of Transport, on a collision which occurred near Gravesend on the South Eastern & Chatham Railway on August 21 last. In the somewhat limited space available at the location investigated—where an engineman and fireman had both passed the signal without observing it—the light signal is recommended "for the consideration of the managing committee" of the railway. Following this recommendation, and closing the report, Major Hall says this was a typical example of the class of accident preventable by automatic train control. The collision occurred at 6:45 a. m. during the prevalence of a dense mist. The engineman did not remember ever having been stopped at this signal before, and the inspector observes that the infrequency of stop signals at this point "has a distinct bearing on the case." The fireman's observation of the signal is believed to have been "quite perfunctory and he is very much to blame for having misled his driver."



3-in. by 3-in. Air-Cooled and 4½-in. by 5-in. Water-Cooled Ingersoll-Rand Air Compressors

for start and stop control machines; and the increased size of the water reservoir cooling pot.

The lubrication of small vertical compressors employing the enclosed crank case and splash system has often been a source of concern wherever oil in the air is a serious menace. The tendency of the old system has been to feed too much, resulting in the discharged air containing excess oil, or too little, causing scored cylinders, excess loads and burned out bearings.

As with the ordinary splash system, the base of the compressor forms an oil reservoir for the constant-level system. However, with this system, pet cocks determine the maximum and minimum amount of oil in the reservoir. Above this reservoir and directly underneath the connecting rod is a constant-level pan. Oil is pumped from the reservoir into this constant-level pan through a unique oil pump. Regardless of the amount of oil in the reservoir, so long as it is somewhere between the high and low level pet cocks, this system will function, insuring a constant-level of oil in the



International

"The Oldest Station of the Oldest Railroad in the World"

Mount Clare Station of the Baltimore & Ohio Built in 1830 and Used Now As a Freight Station. The Station Was Built For the Use of the Line From the Western End of Pratt Street, Baltimore, to the Carroll Viaduct, 1¼ Miles, Toward Ellicotts Mills, the Terminus at That Time of the B. & O.—a 14-Mile Railroad—This Station Supplanted a Wooden Structure Built in 1829.

General News Department

The American Association of Freight Traffic Officers will hold its annual business meeting at the Waldorf-Astoria hotel, New York City, on Monday, December 11, followed by a banquet in the evening.

Employees of the Chesapeake & Ohio, to the number of about 600, are to receive bonuses, a fixed sum for each day, for their voluntary service in doing emergency work during the shopmen's strike of last summer.

The Northern Pacific Shop Workers' Association is the latest addition to the ranks of the "company unions" not allied with National organizations. The new union is reported to have agreed with the company on wage scales and working conditions.

The North Carolina Short Line Railroad Association held its annual meeting at Southport, N. C., on November 21. C. J. Fields, manager of operation and traffic of the Wilmington, Brunswick & Southern, was elected president of the association.

A jury in a trial court at Chicago, on December 1, awarded a brakeman on the Pere Marquette \$41,000 for the loss of an arm and permanent injury to a foot, received when he was thrown from a freight car at Lansing, Mich. The brakeman maintained that the brake chain was too long.

The New York, New Haven & Hartford has made agreements with the enginemen's and the firemen's brotherhoods to continue present pay and conditions until September 30, 1923. The agreements provide for the withdrawal of all cases now pending before the United States Railroad Labor Board.

Pierce Butler's nomination as an associate justice of the United States Supreme Court was passed over by the Senate on December 4 at the close of the extra session, because of the opposition of Senators La Follette and Norris, and President Harding, on the fifth, sent the nomination to the new session of the Senate.

The Southern Pacific is operating a "demonstration train" of 11 cars over its Texas lines, carrying exhibits of agricultural products in great variety, live stock and farm implements; prize winning dairy and beef cattle, sheep, hogs and poultry. A home demonstration car contains exhibits of cooking and sewing. G. A. Long, director of exhibits of the West Texas Agricultural and Mechanical College, has charge of the exhibits.

Grade Crossing Controversy in Toledo

The Toledo, Ohio, city council has forbidden the further construction of railroad tracks in the Lower Town district of that city between Galena street and Bay View Park, following the action of the Ann Arbor Railroad in bringing suit against the city to secure authority to cross several streets in the forbidden district. A proposal to concentrate several Lower Town railroads across one street and thus avoid the cost of eliminating a number of grade crossings will be considered by the council at a future meeting.

Candidates for Officers of Signal Section, A. R. A.

The nominating committee of the Signal Section of the American Railway Association announces the selection of the following candidates for officers of the Section, to be voted for at the annual meeting next March: Chairman, B. T. Anderson (D., L. & W.); first vice-chairman, W. M. Vandersluis (I. C.); second vice-chairman, W. M. Post (Penn.). The time of holding the annual meeting having been changed, the terms of these officers will be from March, 1923, to March, 1924.

A. S. C. E. to Meet in January

The seventieth annual meeting of the American Society of Civil Engineers will be held at the headquarters of the society, 33 West 39th street, New York City, on January 17-19 inclusive. The business meeting will be called to order at 10 a. m. on January 17, at which time the annual reports will be read, officers for the ensuing year elected, reports of special committees presented, medals and prizes awarded, honorary membership conferred with formal appropriate ceremonies and other business transacted.

Automatic Train-Control Orders Modified

The Interstate Commerce Commission has authorized the Central of New Jersey to install, in accordance with the terms of its order, an automatic train-stop or train-control device between Red Bank, N. J., and Winslow Junction, N. J., in lieu of the installation required upon the portion of its line designated in the order of June 13. The Great Northern has also been authorized to make an installation upon one full passenger-locomotive division between Minot, N. D., and Williston, N. D., in lieu of the installation required in the order. The petition of the Richmond, Fredericksburg & Potomac for a modification of the order with respect to certain requirements was denied.

Largest Railway Mail Terminal

The largest mail terminal station in the world was put in operation on December 3, when the Chicago Post Office took possession of the new building at Van Buren street and the Chicago river, Chicago, erected for it by the Chicago Union Station Company. The building is 800 ft. in length and contains belt conveyors, automatic hoists, pneumatic tubes, tilting parcel dumps, and other mechanical devices to aid in the handling of mail. It is equipped to care for 3,000 tons or 100,000 sacks of parcels a day. The building has direct loading facilities on track level for the Chicago, Burlington & Quincy, the Chicago, Milwaukee & St. Paul; the Chicago & Alton and the Pennsylvania. This terminal was described in the *Railway Age* of March 4, page 513.

New Freight Cars in 1922

The railroads of the United States from January 1 to November 1 this year had 47,802 more new freight cars, either ordered and under construction, or installed in actual service, than during the entire year 1921, according to reports received by the Car Service Division A. R. A.; that is to say, a total of 117,238 cars. During the year 1921 the total was 69,436.

Of the total this year, 50,196 were box cars, of which, up to November 1, 19,352 had been installed. Coal cars ordered totaled 49,383, of which 26,812 were actually installed.

There was also an increase of 716 in the number of locomotives installed or on order. Locomotives installed up to November 1 totaled 866, while orders had been placed for 1,232, making a total of 2,098, as compared with 1,382 in the 12 months of 1921.

D. T. & I. Has Deficit for 10 Months

Deficits since July 1 have finally wiped out the net railway operating income earned by the Detroit, Toledo & Ironton during the first six months of the year, and for the 10 months ended October 31 the road had a deficit of \$168,807, which represented a decrease of \$514,115 as compared with the net earned in the corresponding period of last year, according to its report to the Interstate Commerce Commission. For October the deficit was \$174,457. For the 10 months' period the operating revenues were \$7,467,782, an increase of \$2,056,464. The operating expenses were \$6,328,875, an increase of \$2,036,457, but there was

a debit balance in equipment rents amounting to \$1,137,490, which was \$531,561 greater than the debit balance for the previous year. Maintenance of way expenses increased \$411,034, and maintenance of equipment increased \$919,627, while transportation expenses increased \$710,965 and traffic expenses decreased \$12,425.

Lehigh Valley Disposes of Morris Canal

By an agreement signed last week by representatives of the State of New Jersey and officers of the Lehigh Valley Railroad Company, the Morris Canal, extending from the Delaware River at Phillipsburg, N. J., to New York Harbor at Jersey City, is officially abandoned, and the property is divided between the railroad company and the state, the railroad company paying over \$875,000.

The canal has been in the hands of the railroad company since 1871, and though regular business on it has long since ceased, the railroad company has been at large and constant expense to keep the waterway technically in condition for navigation. Negotiations have been going on between the state and the railroad company for many years, but until now without result.

To the railroad company the important feature of the present agreement is the acquisition of absolute title to the freight terminal occupied by the road in Jersey City; the "Big Basin" going to the railroad company and the "Little Basin" to the state. The railroad retains the right-of-way of the canal from the eastern terminus to the Hackensack River, and also terminal properties at Phillipsburg. The state retains the rest of the canal, including the right to divert water from Lake Hopatcong, and other water rights.

Roadmasters Elect Officers

At the convention of the Roadmasters' and Maintenance of Way Association at Cleveland on November 23, the following officers were elected to serve for the ensuing year: President, J. P. Corcoran, roadmaster, C. & A., Bloomington, Ill.; first vice-president, J. B. Martin, supervisor, N. Y. C., Elkhart, Ind.; second vice-president W. E. Muff, roadmaster, A. T. & S. F., Newton, Kan.; secretary P. J. McAndrews, roadmaster, C. & N. W., Sterling, Ill.; treasurer, T. F. Donahoe, general supervisor of road, B. & O., Pittsburgh, Pa.; members executive committee (two years), H. R. Clarke, district engineer, C. B. & Q., Lincoln, Neb.; B. C. Dougherty, roadmaster, C. M. & St. P., Chicago; (four years), J. P. Davis, roadmaster, Central Indiana, Anderson, Ind., and C. H. Gruver, roadmaster, C. R. I. & P., Manly, Iowa. Chicago was selected as the place where the next convention would be held.

On the same morning the Track Supply Association, which presented an exhibit in connection with the convention, elected officers: President, F. M. Condit, railroad department, Fairbanks, Morse & Co., Chicago; vice-president, J. J. Cozzens, salesman, Union Switch & Signal Company, New York; secretary-treasurer, W. C. Kidd, Ramapo-Ajax Corporation, Hillburn, N. Y.; director (two years), J. Howard Horn, sales manager, National Lock Washer Company, Newark, N. J.

New York Railroad Club Golden Jubilee Dinner

The New York Railroad Club will celebrate its fiftieth anniversary by holding a Golden Jubilee Dinner at the Commodore Hotel, New York, on Tuesday evening, December 12. The principal speaker of the evening will be Ex-Governor John J. Cornwell of West Virginia.

Ex-Governor Cornwell comes of very old American stock and is regarded as the leading citizen of the state of West Virginia. He is resolute and fearless and an able and clear thinker. One of his friends is responsible for the statement that "He believes that we are the greatest commercial and agricultural nation atop of earth and he believes in the American people and does not believe that demagogic politicians should injure the American people. He believes in the railroads of our country as the great distributors of our products."

H. H. Vreeland will preside at the dinner as toastmaster. George A. Post will speak of the importance of the club and Mr. Vreeland will trace its history. Ten days before the dinner 2,100 reservations had been made, so that it will be the greatest railroad event of this kind which has ever been held in

this country. Reservations may still be made through J. F. MacEnulty, Pressed Steel Car Company, 55 Broad street, New York.

A Bill to Create Seven Regional I. C. C.'s

A bill to amend the interstate commerce act by providing for the creation of regional Interstate Commerce Commissions located in districts to be constituted by the Interstate Commerce Commission was introduced in the House on December 5 by Representative Hawes. Mr. Hawes also introduced another bill, which provides for the creation of seven district commissions to be designated, respectively, as the New England, Eastern, South-eastern, Central, Western, Southwestern and Pacific divisions of the Interstate Commerce Commission, each consisting of three commissioners appointed by the President, to be charged with the duty of enforcing the provisions of the interstate commerce act pertaining to rates as to the territory included within their divisions. The bill provides for hearings before the commission at Washington in cases involving two or more of such divisions and for appeals from the division commissions to the commission at Washington.

Wage Statistics for September—

Over \$3,000,000 in Bonuses

The total number of employees reported by Class I railroads for the month of September, 1922, was 1,708,591, an increase of 114,517, or 7.2 per cent, over the preceding month, according to the monthly statistical bulletin issued by the Interstate Commerce Commission. The total compensation was \$238,735,394, an increase of \$13,758,750, or 6.1 per cent. The largest increase in employment appears in the maintenance of equipment and stores group, which was 96,505. The total number of employees falling within that group was 410,278, or 85 per cent of the average number employed during the 12 months preceding the strike. The number of persons employed as machinists, blacksmiths, or boilermakers was 69 per cent of the average for the year ended June 30, 1922.

As in August, the overtime made by shop employees was abnormally heavy, representing 25.57 per cent of their total compensation. In June, 1922, or the month just prior to the strike, this percentage was 2.62.

Reports from 181 roads employing 98 per cent of the total number of employees indicate that during the month the employees received bonuses amounting to \$3,689,907 for loyal service performed during the strike, which amount is not included in this summary.

Compared with the previous month, the increase or decrease (D) in the number of employees, by groups, was as follows:

Executives, officials and staff assistants.....	119
Professional, clerical and general.....	D 7,060
Maintenance of way and structures.....	1
Maintenance of equipment and stores.....	96,505
Transportation (other than train, engine and yard).....	5,685
Transportation (yardmasters, switch tenders and hostlers).....	863
Transportation (train and engine service).....	18,404
Net increase	114,517

The reduction in the number of employees in the professional, clerical, and general group was brought about by a reduction in the number of lieutenants and sergeants of police and patrolmen. In June, 1922, there were 8,482 employees in these two classes. In July, as a result of strike conditions, the number was increased to 39,430.

A comparison of the number of employees and their compensation, by months, follows:

Month	Number of employees	Total compensation
September, 1921 ¹	1,718,330	\$223,972,822
October, 1921 ¹	1,754,136	237,602,959
November, 1921 ¹	1,732,353	225,304,006
December, 1921 ¹	1,637,151	214,921,396
January, 1922 ¹	1,552,014	205,178,639
February, 1922 ¹	1,545,040	194,523,427
March, 1922 ¹	1,570,158	216,701,408
April, 1922	1,578,133	203,413,071
May, 1922	1,628,228	216,672,028
June, 1922	1,685,414	222,932,689
July, 1922	1,467,824	193,571,244
August, 1922	1,594,074	224,976,644
September, 1922	1,708,591	238,735,394

¹Excludes Detroit, Toledo & Ironton.

Commission and Court News

Court News

U. S. R. A. Baggage Regulations

The Texas Court of Civil Appeals holds that not only did the baggage regulations promulgated by the Railway Administration during federal control set aside any state laws in conflict with them, but they were binding upon all passengers, interstate or intrastate, regardless of the passenger's lack of knowledge of the regulations or the failure of the carrier to inquire as to the value of the baggage—*San Antonio, Uvalde & Gulf v. Nast* (Tex. Civ. App.) 240 S. W. 596.

Sudden Application of Brakes Danger to Cattle in Cars

In an action for killing mules on the track the Texas Court of Civil Appeals holds that with a heavy train, 40 carloads of cattle moving down grade at 15 or 20 miles an hour, with the mules only 100 ft. ahead, it would have been poor judgment for the engineman to apply his brakes in emergency, even if he could hope to avoid striking the mules, since this would have thrown the cattle in the cars off their balance, to their injury; and a judgment for plaintiff was reversed.—*Hines v. Pennington* (Tex. Civ. App.) 240 S. W. 703.

Landowner's Contract to Repair Railroad Fence

The Tennessee Supreme Court holds that a landowner's contract to keep a railroad fence in repair with material furnished by the railroad on notice of defects, the owner releasing the company from all claims for damages to straying animals, is not invalid for want of consideration, since the statute does not impose on railroads the absolute duty of fencing their tracks; it merely makes them liable for the value of stock killed by its moving trains if the track is not fenced. The owner cannot recover for the value of his stock killed as a result of his own failure to give notice to the railroad of defects in the fence.—*Buford v. Louisville & Nashville* (Tenn.) 240 S. W. 759.

United States Supreme Court

Alleged Overcharge Not Recoverable

Under Anti-Trust Law

Action was brought under the Anti-Trust Act by a manufacturer of excelsior and flax tow at St. Paul against eight railroad companies, members of the Western Trunk Line Committee and their officers, for damages alleged to have resulted from an agreement for uniform rates from St. Paul on excelsior and tow. The rates had been approved by the Interstate Commerce Commission. Whether there was a cause of action under section 7 of the Anti-Trust Act was the sole question for decision. The Supreme Court of the United States answers the question in the negative, affirming a judgment in favor of the defendants by the Circuit Court of Appeals for the Seventh Circuit (271 Fed. 444).

The plaintiff alleged conspiracy to eliminate competition. The Supreme Court holds that a rate is not necessarily illegal because it is the result of a conspiracy in restraint of trade in violation of the Anti-Trust Act. What rates are legal are determined by the Act to Regulate Commerce. Congress did not intend to provide the shipper, from whom illegal rates have been exacted, with an additional remedy under the Anti-Trust Act. "If a shipper could recover under section 7 of the Anti-Trust Act for damages resulting from the exaction of a rate higher than that which would otherwise have prevailed, the amount recovered might, like a rebate, operate to give him a preference over his trade competitors. It is no answer to say that each of these might bring a similar action under section 7. Uniform treatment would not result, even if all sued, unless the highly improbable happened, and the several juries and courts gave to each the same measure of relief."

It is the Commission which must determine whether a rate is

discriminatory, in the first instance at least. Not only did the injury complained of rest on hypothesis, but the damages alleged were purely speculative. Damages must be proved by facts from which their existence is logically and legally inferable. They cannot be supplied by conjecture. Exaction of the higher legal rate may not have injured the plaintiff at all; and for every article competing with excelsior and tow, the adjustment of the rate must have been made. No court or jury could say that, if the rate had been lower, Keogh would have enjoyed the difference or that any other advantage would have accrued to him. Judgment for defendants affirmed. *Keogh v. Chicago & North Western*. Opinion by Mr. Justice Brandeis. Decided November 13, 1922.

Not Liable for Obstruction of River by Old Piles

In 1895 the California Pacific was authorized to build a new bridge over the Sacramento River at Sacramento, the approval of the Secretary of War being given on condition that the company remove the piers of the old bridge to a depth of 7 ft. below low-water level. This condition was complied with, the old piles being cut down three or four feet lower than was required, to a level with or below the then existing bed of the river. Subsequent dredging operations by the government gradually lowered the bed of the river until, in 1918, the old stumps protruded several feet above the river bed. In that year a dredger, drifting down the river, struck a stump and sank. The owner sued the California Pacific and the Southern Pacific, the railroads using the bridge, for damages for collision. The federal district court dismissed the libel. This was reversed by the Circuit Court of Appeals, Ninth Circuit, on the ground that the railroads should have guarded against the probability of the channel shifting and the river bed being lowered.

The United States Supreme Court has reversed the decree of the Circuit Court of Appeals and affirmed that of the district court, holding that the railroads were entitled to rely on the order of the Secretary of War, and having complied with it, could not reasonably be held to an indefinite and speculative responsibility for changed conditions. The subsequent obstruction was due to changes of a most radical character in the river channel, brought about, in the main, by the government itself, which the railroads were not negligent in failing to anticipate, so that, even leaving out of consideration the order of the Secretary of War, there appeared no ground on which the railroads could be held liable.—*Southern Pacific v. Olympian Dredging Co.* Opinion by Mr. Justice Sutherland. Decided November 13, 1922.

Not Liable for Injury to Boy Climbing Bridge

A public municipal steel truss bridge over the tracks of the New York, New Haven & Hartford at 149th street, New York City supports cross arms carrying bare electric wires for operating the trains. The nearest wire is 19 inches from the floor of the bridge. With difficulty and danger active boys can climb to the highest parts of the bridge and often did, until chased away. A board at each end of the bridge bore a warning against the danger of live wires. In June, 1916, a boy eight years old climbed to the top of the bridge after a bird's nest, touched the wire and received severe injuries, for which he and his father sued the railroad. The Circuit Court of Appeals, Second Circuit, affirmed judgments for the plaintiffs February, 1921, 271 Fed. 419.

The United States Supreme Court has reversed these judgments. "Infants have no greater right to go upon other people's land than adults, and the mere fact that they are infants imposes no duty upon land owners to expect them and to prepare for their safety," in the absence of some temptation amounting to invitation. In the present case there was no such invitation. "It is clear that if the plaintiff had been an adult, he could not recover; and we are unable to find any sufficient evidence from which the jury could have properly concluded that the railway company either directly or by implication invited or licensed him to climb upon the strut to a point from which he could touch the bare wire thirty feet above the street. The motion for an instructed verdict should have been granted." *N. Y., N. H. & H. v. Fruchter*. Opinion by Mr. Justice McReynolds. Decided November 13, 1922.

Labor Board Decisions

Drawbridge Operators Classified

as Stationary Engineers

A question was raised by the employees of the New York Central regarding the classification and rating of the men in charge of the operation of a drawbridge which is swung by steam power at Charlotte, N. Y. The duties of these men consist of operating the engine incident to the swinging of the bridge, firing the boiler and making routine repairs to the power plant. The employees contended that these men should be classified as stationary engineers, while the railroad contended that they are drawbridge operators. The Labor Board decided that they should be classified as stationary engineers.—*Decision No. 1354.*

Right of Express Company to

Reduce Number of Messengers

In the complaint filed against the American Railway Express by the Brotherhood of Railway and Steamship Clerks, etc., the right of the company to make a reduction in the number of messengers on trains between Clarksdale and Yazoo City, Miss., was contested. On March 14, 1922, the company abolished one run and so arranged the schedules that three messengers were able to handle the same trains as four had handled before. The employees requested that the runs be re-established with the four messengers and that the three messengers who had been assigned to these runs be paid a salary commensurate with the number of increased hours they had been compelled to work. As the evidence did not indicate that the reduction in crews and increase in mileage was made for the purpose of offsetting the rules of the agreement, the Labor Board denied the claim of the employees.—*Decision No. 1338.*

Trainmen and Conductors Required to

Operate Air Dump Cars

The Order of Railway Conductors and the Brotherhood of Railroad Trainmen protested against the action of the Northwestern Pacific in requiring trainmen to operate "Lidgerwoods," Jordan spreaders or air dump cars. In drawing up the agreement with its employees the railway agreed to relieve trainmen from the physical operation of Hart convertible and similar types of work cars which are dumped by means of a ratchet operated by a man at the end of the car. Air dump cars require merely the manipulation of a valve located on the end of the car to dump the car and return it to the normal position after dumping. It has been the practice for trainmen to operate these valves, while maintenance of way employees were assigned to the operation of such cars as required physical effort. The Labor Board decided that the service required was not unduly burdensome and that it was reasonable to call upon trainmen to operate the valves on air dump cars.—*Decision No. 1326.*

Proof of Authority for Representation Required

On April 18, 1922, the chief executive of the United Brotherhood of Maintenance of Way Employees and Railway Shop Laborers claimed, before the Labor Board, that the organization represented a majority of the maintenance of way employees and railway shop laborers on the Wabash, Chester & Western. The railway contended that there was no controversy between it and its employees; that on that railroad there was no organization of the employees referred to and that the complainant organization did not represent anyone on that road; and it refused to deal with them. The Labor Board decided that the road should arrange to hold a conference with the representatives of the maintenance of way organization; and if they can produce evidence that the employees on this road have designated that organization to represent them, negotiations shall be conducted in an effort to agree upon rules and working conditions covering the employees involved.—*Decision No. 1357.*

Engine Watchmen Entitled to Meal Period

The Gulf Coast Lines employ three engine watchmen at Anchorage, La., each of which is assigned to work 8 hours a day, exclusive of the meal period, which makes a spread of 8 hr. and 20 min., from the time they report for duty until they are released. The employees contended that these men should be allowed 20 min., or more for a meal period without deduction in pay since they did not leave the premises of the road for lunch, nor neglect any of their duties; there was sufficient time in which to eat while waiting for steam or for an engine to fill with water or oil. They contended further that the carrier has no right to hold them on duty an extra 20 min., without extra compensation. The carrier contended that it was within its rights by arranging the shifts in this manner and requiring a 20-min. overlap. The Labor Board decided that in accordance with section a-2, Article V, of Decision No. 501, the employees should be granted a meal period not to exceed 20 min., without any deduction in pay and without being required to lap shifts or make up this time.—*Decision No. 1345.*

Extended Leave of Absence Sustained

A bridge and building foreman on the Chicago, Indianapolis & Louisville was granted two months' leave of absence to serve as general chairman of the United Brotherhood of Maintenance of Way Employees and Railway Shop Laborers. At the end of this period he decided to retain this position permanently and the railway demoted him to carpenter, contending that an employee in a supervisory capacity should not act as general chairman representing the employees. He was further notified that if he expected to remain in the service of the carrier as a carpenter, he would have to work enough time to keep his name on the payroll. The employees appealed to the Labor Board, which decided that it has been a recognized and time-honored practice with practically all carriers having working agreements with their employees to grant leaves of absence (ofttimes indefinite with full retention of seniority rights) to general chairmen representing large groups of employees in order that they might perform the duties incumbent upon that position. The Labor Board decided that the carrier was not justified in refusing this man further leave and free transportation and that he should be restored to the seniority roster in accordance with his standing prior to his demotion.—*Decision No. 1342.*

Selection of Employee Representation

In accordance with Decision No. 119, the Pere Marquette entered into negotiations with a committee representing the United Brotherhood of Carpenters and Joiners of America which was recognized by the carrier as the duly recognized representatives of the workmen in the bridge and building department. In these conferences certain working rules and agreements were agreed upon, while certain others were not agreed upon and were submitted to the Labor Board for decision. Later the road entered into negotiations with the United Brotherhood of Maintenance of Way Employees and Railway Shop Laborers, in the course of which a disagreement arose regarding the scope of the rules so negotiated. The Maintenance of Way Brotherhood contended that it represented all employees in the maintenance of way department, while the carrier took the position that the bridge and building employees were represented by another committee and should therefore be eliminated from the scope of the rules under consideration. Later the carrier placed in effect the provisions of Decision No. 501 for all employees referred to therein, including those of the bridge and building department in lieu of the rules agreed upon in the conference with the committee of the United Brotherhood of Carpenters and Joiners of America. Representatives of the employees took the position that the road should not have applied Decision No. 501 to the employees in the bridge and building department in lieu of the rules that had been agreed upon. In its opinion the Labor Board took the position that it will not decide questions as to the jurisdiction of organizations nor as to representation of employees. It sustained the carrier in the application of Decision No. 501 to the employees of the bridge and building department and stated that the inclusion of these employees shall not preclude them from selecting representatives of their own choosing.—*Decision No. 1358.*

Foreign Railway News

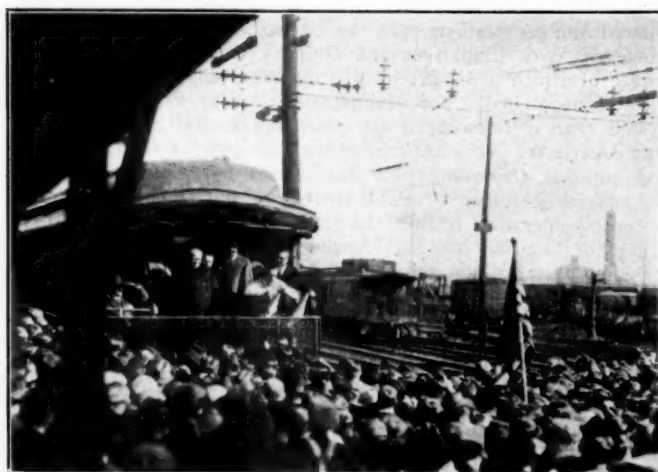
New General Manager for the Great Eastern of England

S. A. Parnwell, assistant general manager of the Great Eastern of England, has been appointed general manager succeeding Sir Henry Thornton, K. B. E., who has gone to Canada to take up his new duties as president of the Canadian National Railways. Mr. Parnwell entered railway service as a surveyor for the Great Northern Railway (England) and in January, 1909, was appointed land agent of the Great Eastern. When Sir Henry Thornton became general manager, Mr. Parnwell was named as one of a committee to draw up a new plan for the organization of the company. When the new organization was put into effect Mr. Parnwell was appointed assistant to the general manager. In 1916 he became secretary and comptroller. During the war when Sir Henry Thornton's military duties kept him from his post with the Great Eastern, Mr. Parnwell served as acting general manager. At the end of hostilities he was appointed assistant general manager.

British Firms Secure South African Electrification Contracts

A number of British firms have secured the contracts for the railway electrification in Natal, South Africa. The total expenditure involved is placed at £4,500,000. Among the firms participating are: Metropolitan-Vickers Electrical Co., Ltd.; C. A. Parsons & Company, Ltd.; Babcock & Wilcox, Ltd.; British Thomson-Houston Co., Ltd.; Telegraph Manufacturing Company; A. Reyrolle & Company, Ltd.; South African General Electric Company. For the automatic telephone exchange equipment contracts aggregating £100,000 have been awarded to Messrs. Siemens Brothers & Company, Ltd., of Woolwich, England.

The contracts placed with the Metropolitan-Vickers Company include seventy-eight 3,000-volt, direct-current electric locomotives, according to the Times (London) Trade Supplement for November 25, 1922. The electrical equipment for the locomotives will be built at the Sheffield works of the Vickers Company. The section of railway to be electrified extends from Glencoe to Pietermaritzburg, a distance of about 200 miles. The new locomotives are expected to be capable of making a round trip from Ladysmith to Pietermaritzburg once every twenty-four hours for six days a week, the distance being 129 miles each way.



International

Georges Clemenceau at New Haven—Yale Students Cheering for Him

Equipment and Supplies

Locomotives

THE CANADIAN NATIONAL RAILWAYS are inquiring for about 65 locomotives.

THE LAKE TERMINAL has ordered two 8-wheel switching locomotives from the Baldwin Locomotive Works.

THE UNION PACIFIC has ordered one 12-ft. cut rotary snow plow from the American Locomotive Company.

THE LOUISIANA CENTRAL LUMBER COMPANY has ordered one Prairie type locomotive from the Baldwin Locomotive Works.

NORTON, GRIFFITH LTD., Ceara, Brazil, have ordered 2, 4-wheel switching locomotives and 2 Consolidation type locomotives from the Baldwin Locomotive Works.

THE GEORGIA NORTHERN has ordered one 4-6-0 type locomotive from the American Locomotive Company. This locomotive will have 19 by 26 in. cylinders and a total weight in working order of 143,000 lb.

THE DETROIT TERMINAL has ordered 2, 8-wheel switching locomotives from the American Locomotive Company. These locomotives will have 25 by 30 in. cylinders and a total weight in working order of 240,000 lb.

THE MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE has ordered 5 Pacific type locomotives from the American Locomotive Company. These locomotives will have 25 by 26 in. cylinders and a total weight in working order of 269,000 lb.

THE UNION OIL COMPANY, Oleun, Cal., has ordered one 4-wheel switching locomotive from the American Locomotive Company. This locomotive will have 16 by 24 in. cylinders and a total weight in working order of 99,000 lb.

THE WARREN PIPE & FOUNDRY COMPANY, Phillipsburg, N. J., has ordered one 4-wheel switching locomotive from the American Locomotive Company. This locomotive will have 16 by 24 in. cylinders and a total weight in working order of 99,000 lb.

THE LEHIGH PORTLAND CEMENT COMPANY, Allentown, Pa., has ordered one 4-wheel switching locomotive from the American Locomotive Company. This locomotive will have 14 by 22 in. cylinders and a total weight in working order of 79,000 lb.

THE RIVERSIDE PORTLAND CEMENT COMPANY, Riverside, Cal., has ordered one 0-6-0 switching locomotive from the American Locomotive Company. This locomotive will have 18 by 24 in. cylinders and a total weight in working order of 128,000 lb.

THE ESSEX TERMINAL RAILWAY, Walkerville, Ont., Canada, has ordered one 6-wheel switching locomotive from the American Locomotive Company. This locomotive will have 20 in. by 26 in. cylinders and a total weight in working order of 145,000 lbs.

THE INSPECTORIA FEDERAL DAS ESTRADAS FOR: E. F. CENTRAL DO PIAUHY (BRAZIL) has ordered one 6-wheel switching locomotive and one consolidation type locomotive from the American Locomotive Company. The switching locomotive will have 13 by 18 in. cylinders and a total weight in working order of 70,000 lb., and the consolidation type will have 17 by 22 in. cylinders and a total weight in working order of 90,000 lb.

THE DENVER & RIO GRANDE WESTERN has ordered 10 Mountain type and 15 Mallet type locomotives from the American Locomotive Company. The Mountain type will have 28 by 30 in. cylinders and a total weight in working order of 377,000 lb. Of the Mallet type, 10 locomotives will have 25 and 39 by 32 in. cylinders and a total weight in working order of 531,000 lb. and five locomotives will have a total weight in working order of 230,000 lb.

Freight Cars

THE GREAT NORTHERN is in the market for 500, 75-ton steel ore cars.

THE ST. LOUIS, TROY & EASTERN is inquiring for 300 flat cars of 50 tons' capacity, also for 100 gondola cars.

THE TEXAS COMPANY, reported in the *Railway Age* of October 21 as inquiring for 100 tank cars, has ordered this equipment from the General American Tank Car Corporation.

THE CANADIAN NATIONAL RAILWAYS will ask for bids soon for 100 general service coal cars, 100, 40-ton freight refrigerator cars, 100 ballast cars, 800 automobile cars and 2,000 box cars of 40 tons' capacity.

THE UNION PACIFIC is asking for bids on 5,000 refrigerator cars. These cars are for the Pacific Fruit Express. The plans also include the construction of 300, 50-ft., refrigerator cars equipped for passenger train service.

THE SOUTHERN PACIFIC, reported in the *Railway Age* of December 2 as asking for prices on 5,000 cars, is now inquiring for 1,700 cars additional, as follows: 1,150, 50-ton, drop-bottom gondola cars; 50, 50-ton tight-bottom gondola cars, and 500, 40-ton logging cars.

THE CHICAGO, MILWAUKEE & ST. PAUL has ordered 1,000 gondola cars from the Pullman Company and 1,000 from the Western Steel Car & Foundry Company. This is additional to the orders placed by this company for 5,500 cars, as reported in the *Railway Age* of December 2.

THE NORTHERN PACIFIC, reported in the *Railway Age* of October 28 as inquiring for 3,000 box cars, has ordered 1,000 of these cars from the American Car & Foundry Co., 1,000 from the General American Car Company, and 1,000 from the Western Steel Car & Foundry Company.

THE ST. LOUIS SOUTHWESTERN, reported in the *Railway Age* of November 4 as inquiring for 1,200 cars, has ordered 500 box cars from the American Car & Foundry Company, 500 automobile cars from the Mt. Vernon Car Company and 200 convertible cars from the Rogers Ballast Car Company.

THE UNION TANK CAR COMPANY, reported in the *Railway Age* of November 11 as inquiring for from 500 to 2,000 tank cars of 10,000 gal. capacity, has ordered 1,000 from the Standard Steel Car Company, 1,000 from the American Car & Foundry Company, 500 from the General American Tank Car Corporation and 500 from the Cambria Steel Company.

Passenger Cars

THE MEXICAN POST OFFICE DEPARTMENT is inquiring for 30, 40-ft. steel mail cars.

THE CANADIAN NATIONAL RAILWAYS will ask for bids soon for 100 steel sleeping cars.

THE SOUTHERN PACIFIC contemplates coming in the market soon for about 140 passenger train cars.

THE NEW YORK CENTRAL, reported in the *Railway Age* of November 11 as inquiring for 72 cars for passenger service, has ordered 35, 70-ft. steel coaches with 4-wheel trucks from the Pullman Company; 5, 70-ft. combination passenger and baggage cars from the Pressed Steel Car Company and 10 multiple unit steel passenger motor cars for suburban service from the Standard Steel Car Company, all for use on the New York Central. An order has also been placed for 10, 60 ft. 6 in. steel baggage cars with the American Car & Foundry Company for use on the Michigan Central.

Machinery and Tools

THE NEW YORK CENTRAL is inquiring for a 6-ft. radial drill.

THE SOUTHERN PACIFIC has ordered a piston-rod grinder, a lathe and a quartering machine from the Niles-Bement-Pond Company.

Supply Trade News

The Power Specialty Company, New York City, has opened new branch offices in Detroit, Mich., in the Dime Savings Bank building, in charge of L. Lanyi, and in Boulder, Colo., at 2324 Fourteenth street, in charge of R. B. Nutting, who was formerly Chicago district manager.

Ray G. White, formerly Chicago branch manager of B. M. Jones & Co., Inc., has recently been appointed eastern railroad sales agent for the McInnes Steel Company, Ltd., Corry, Pa., manufacturers of hammered crucible tool steels. Mr. White has opened a temporary office at 56 Murray street, New York City.

W. D. Hudson, formerly principal assistant engineer of C. E. Smith & Co., has resigned to become associated in the capacity of transportation engineer with Harland Bartholomew, city plan engineer, St. Louis, Mo. Mr. Hudson will handle railroad and waterway transportation, also grade crossing elimination problems.

The General Electric Company, Schenectady, N. Y., has set aside a fund of \$400,000, the income from which will be available for encouraging and rewarding service in the electrical field by giving prizes to its employees. As an expression of appreciation to Charles A. Coffin, who retired in May 1922 from the active leadership of the General Electric Company, the board of directors named it the Charles A. Coffin Foundation.

E. D. Lynch, of the railway department, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has been transferred to the New Haven, Conn., office, to fill the vacancy made by J. P. Alexander's removal to the Boston, Mass., office. R. W. Everson, sales manager of the Mexican branch of the Westinghouse Electric International Company, has been appointed district manager of the Atlanta, Ga., office of the Westinghouse Lamp Company, to succeed Julien Binford, Jr., resigned. A. G. Crocker has been appointed special power representative in the Detroit, Mich., office of the Westinghouse Electric & Manufacturing Company.

A. C. Scherer has been appointed assistant to C. W. Genet, Jr., in the supervision of the rail and track appliances department of Robert W. Hunt & Company, Chicago. Mr. Scherer graduated from the University of Wisconsin in 1909, and immediately entered the employ of Robert W. Hunt & Company, since which time he has served consecutively as chief inspector at the Monterey (Mexico) Steel works, and at the Lackawanna Steel Company's plant, and in charge of the physical laboratory at Chicago, which position he held at the time of his recent promotion. He served as a lieutenant in the ordnance department of the United States Army during the war.

Lorenzo C. Dilks has resigned as vice-president of the George A. Fuller Company, New York, to become vice-president of Starrett Brothers, Inc., New York City. Mr. Dilks' office will be in Chicago. Starrett Brothers, Inc., is a new corporation, formed to carry on the business of building construction by Paul Starrett, formerly president of the George A. Fuller Company, Colonel W. A. Starrett, formerly vice-president of the George A. Fuller Company, prior to that chairman of the construction division of the War Industries Board and who was also with Starrett & Van Vleck, architects; Ralph Starrett, formerly of the Thompson-Starrett Company, Andrew J. Eken, formerly vice-president of the George A. Fuller Company, and Lorenzo C. Dilks.

Daniel M. Brady Honored

The directors of the Brady Brass Company, New York, tendered a luncheon at the India House, New York, on December 6, in honor of their president, Daniel M. Brady. The dinner was given in recognition of the fact that he has just completed a half century of service in the railway industry and two score

years in the metal trade. There were a large number of guests, all business friends of Mr. Brady. Hon. Morgan J. O'Brien presided as toastmaster and addresses were made by Henry A. Bishop of Bridgeport, Conn.; John F. Fowles, vice-president of W. R. Grace & Co., and C. S. Trench, editor of the American Metal Market. Mr. Bishop made a presentation speech, Mr. Brady being the recipient of a gold watch, suitably engraved for the occasion, from the stockholders of the company.

Obituary

J. J. McCarthy, treasurer and chairman of the board of directors of the Chicago-Cleveland Car Roofing Company, Chicago, whose death in Chicago from pneumonia on November 25 was reported in the *Railway Age* of December 2, was born at Burlington, Vt., on April 8, 1842, and moved to Chicago with his parents in 1845. His first railway experience was acquired with the Chicago & North Western in 1855. He was engaged in the banking business from 1856 to 1881 in Chicago, being associated with the Tinkham Banking Company, George C. Smith & Company and the Bank of Montreal, consecutively. During the Civil War he was in the service of the Army of the Potomac in the Quartermaster's Corps, being stationed at Harper's Ferry. In 1881, he organized the Chicago Car Roofing Company, which later became the Chicago-Cleveland Car Roofing Company. At the time of the Chicago fire, when the currency of the banks of that city could not be reached because of the fire, Mr. McCarthy went to New York and secured the first currency that was put into circulation immediately following the fire. Mr. McCarthy was said to be one of the two oldest residents of Chicago.



J. J. McCarthy

Trade Publications

LOCOMOTIVE STARTER.—A booklet describing and illustrating the Street locomotive starter has recently been issued by Clement F. Street, Greenwich, Conn. Photographs and drawings are included showing the locomotive starter as applied to the trailer axle, and also diagrams showing the increase in starting tractive force obtained by the application of the starter to various types of locomotives.

TRUCKING COMPANIES which do business at railroad freight stations in Manhattan, New York City, number more than 150, and the problem of general store-door delivery continues perplexing. As indicating the magnitude of the business to be dealt with, W. H. Connell, assistant manager of the traffic bureau of the Merchants' Association, gives the following data: "During August the American Railway Express Company made 2,626,000 calls to pick up outbound shipments from Manhattan, Bronx, Jersey City and Brooklyn. During this period that carrier made 857,000 calls delivering inbound shipments, or a total of 3,483,000 calls. Of this total 85 per cent of the pick-ups and delivery calls was made on Manhattan Island. Vehicles used numbered 786, of which 412 were engaged in pick-up service for outbound shipments and 376 for deliveries. The pick-up wagons made 237 calls per vehicle per day. The average calls per vehicle in delivering inbound shipments were 2,280 or 84.4 calls per vehicle per day. . . . It is reasonable to assume that no trucking concern in New York city is making 84 calls per vehicle per day on either inbound or outbound freight shipments."

Railway Construction

BALTIMORE & OHIO.—This company has placed a contract with Seaboard Construction Company, of Philadelphia, Pa., covering the erection of new spans required to provide additional waterway at its bridge crossing Grand Calumet river, Gary, Ind. The additional opening supplements a 14-ft. arch built in 1908. The new spans are of the deck plate girder type, double-track, solid floor, 78 ft. and 25 ft. long, respectively.

CANADIAN PACIFIC.—This company has awarded a contract to the Sidney E. Junkins Company of Winnipeg and Vancouver for the construction of an ocean pier, 330 ft. by 850 ft., at Vancouver, B. C., at an approximate cost of \$2,000,000. The work is to be completed by September 30, 1923.

CHICAGO, BURLINGTON & QUINCY.—This company will build a second main track for six miles between Sorento, Ill., and Ayres, at a cost of approximately \$200,000.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—This company will construct a one-story frame shop 45 ft. by 200 ft., at Lafayette, Ind., to cost approximately \$8,000, to replace one recently destroyed by fire.

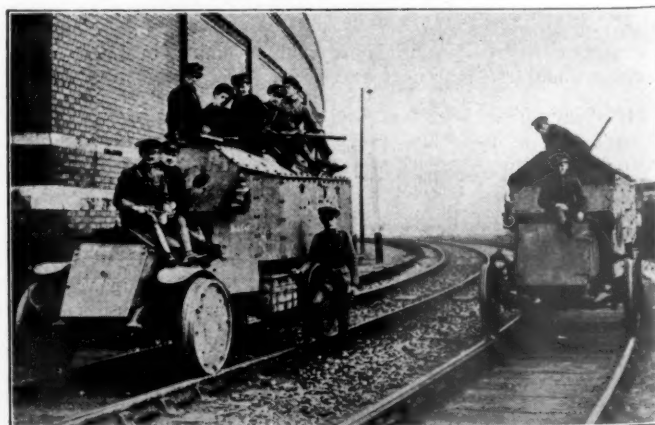
CHICAGO, INDIANAPOLIS & LOUISVILLE.—This company has awarded a contract to the Ogle Construction Company, Chicago, for the rebuilding of a coaling station of 300 tons' capacity at South Hammond, Ind., to replace one which was recently destroyed by fire.

ILLINOIS CENTRAL.—This company will construct a spur track 3 mi. long from the main line at Elkhville, Ill., to the mine of the Black Servant Coal Company, at an estimated cost of \$50,000. The work will be commenced at once by company forces.

MISSOURI PACIFIC.—This company has awarded a contract to the Herman & McCain Construction Company, Little Rock, Ark., for the construction of a passenger station at Harrisburg, Ark. The building will be 24 ft. by 71 ft., and will be of brick with slate roof.

PACIFIC SOUTHWESTERN.—This company has been granted permission by the Railroad Commission of California to construct a standard gage line from Lompoc, Cal., to White Hall, a distance of approximately four miles.

WISCONSIN SOUTHERN.—This company, which was organized recently, has completed surveys for a line from Madison, Wis., to Calumetville, and plans to begin grading and track laying in March, 1923. The road will eventually extend from Madison to Manitowoc and other lake Michigan points, a distance of 164 miles. The project is expected to cost approximately \$2,600,000. C. D. Smith, of Fond du Lac, Wis., is president of the road.



Kadel & Herbert

Irish Regular Army Railway Patrol Between Cork and Mallow

Railway Financial News

BUFFALO & SUSQUEHANNA.—Special Dividend.—This company has declared a special dividend of \$10 a share in addition to the regular quarterly dividend of $1\frac{3}{4}$ per cent on the common stock, also the regular semi-annual dividend of 2 per cent on the preferred stock. The dividends will be paid December 30 and distributed to holders of record December 15.

CHICAGO, TERRE HAUTE & SOUTHEASTERN.—Authorized to Issue Bonds.—This company has been authorized by the Interstate Commerce Commission to issue \$713,000 of 5 per cent first and refunding mortgage gold bonds to be delivered to the Chicago, Milwaukee & St. Paul for the payment of certain obligations of the company and for the payment by the Chicago, Milwaukee & St. Paul for additions, betterments and extensions to the property of the C. T. H. & S. E. The Chicago, Milwaukee & St. Paul was also authorized to assume obligation and liability in respect of these bonds.

CINCINNATI, INDIANAPOLIS & WESTERN.—Equipment Trust Certificates Authorized.—The Interstate Commerce Commission has authorized this company to assume obligation and liability in respect of \$300,000 of equipment trust certificates.

DETROIT, TOLEDO & Ironton.—Reserves Decision on Lease.—Justice E. J. Gavegan in special term of the Supreme Court of New York on Tuesday reserved decision in the application of Leon Tanenbaum, representing minority stockholders in the Detroit, Toledo & Ironton Railroad, for an examination prior to the trial of a suit against Henry Ford to restrain the company from executing a lease for 75 years to the Detroit & Ironton Railroad. This latter company was organized under the laws of Delaware by Henry and Edsel Ford, who own almost the entire stock. The complainant, who alleges that he invested \$10,000 in the old company, charges that the lease to Ford interests would deprive the minority stockholders from sharing in any of the profits that might be derived from the lease.

ERIE.—Cash on Hand \$6,000,000.—President F. D. Underwood has denied reports of an impending receivership, stating that the company has cash in hand of about \$6,000,000 and bills due January 1, 1923, amount to \$2,737,411.

MINNEAPOLIS & ST. LOUIS.—New Director.—E. E. Nash, vice-president in charge of operation and maintenance of this road, with headquarters at Minneapolis, Minn., has been elected a director.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—Dividends Declared.—The directors have declared a dividend of \$2 on both the preferred and common stock from the accumulated surplus of 1909 to 1919, inclusive, payable December 28 to stock of record December 15. The same dividend was declared by the Soo Line in March out of accumulated surplus. The preferred stockholders, however, took the matter into court, claiming that it was illegal to pay anything on the common until the full amount for the year had been paid on the preferred. The lower court upheld the company, but the case was appealed and is still in litigation.

MISSOURI, KANSAS & TEXAS.—Sale Again Postponed.—The sale of the properties of this railroad has again been postponed to December 13, 14 and 15.

MISSOURI-KANSAS-TEXAS.—Reorganization Plan Approved.—The Interstate Commerce Commission on December 4 issued an order approving the principal features of the reorganization plan by which the Missouri-Kansas-Texas Railroad is to take over the properties of the Missouri, Kansas & Texas and authorizing the issuance of the securities in accordance with the plan. The commission issued a certificate that the public convenience and necessity require the acquisition of 19 lines of the system and authorized the purchase of the stock of the companies, also the acquisition and operation under trackage agreements of 5 lines and terminal companies. Authority was also given for the ac-

quisition of control of the property leased by the Booneville Railroad Bridge Company to the Missouri, Kansas & Texas and by the Oklahoma Belt to Charles E. Schaff as receiver for that company, but action was deferred on the request for authority to acquire that property or the properties of the Missouri, Kansas & Texas Terminal Company of St. Louis. Authority was given for the issue of \$52,942,752 of prior lien mortgage gold bonds, series A, \$27,236,000 of prior lien bonds, series B, \$29,121,347 of prior lien bonds, series C, of which \$6,500,000 are to be pledged with the director general of railroads, and \$57,500,000 of convertible adjustment mortgage gold bonds. The company is also authorized to issue \$30,000,000 of 7 per cent preferred stock and such additional amount as may be necessary to effectuate the conversion of the convertible bonds, also 1,000,000 shares of common stock without par value. Commissioner Eastman dissented.

NEW YORK CENTRAL.—New Director.—W. P. Bliss has been elected a director to succeed A. T. Hardin, deceased.

STEWARTSTOWN.—Asks Authority to Issue Stock.—This company has applied to the Interstate Commerce Commission for authority to increase its capital stock from \$100,000 to \$200,000 to pay for some improvements and to pay off a small bond issue.

TIONESTA VALLEY.—Asks Authority to Abandon Line.—This company has applied to the Interstate Commerce Commission for authority to abandon its line from a point near Brookston to a point near Nansen, Pa., $8\frac{3}{4}$ miles.

WICHITA FALLS & OKLAHOMA.—Asks Authority to Issue Securities.—The Wichita Falls & Oklahoma Railway has applied to the Interstate Commerce Commission for authority to issue \$6,000 of capital stock and \$109,000 of first mortgage gold bonds and the Wichita Falls & Oklahoma Railroad of Oklahoma has applied for authority to issue \$7,500 of stock and \$418,000 of first mortgage bonds. The Colorado & Southern has also applied for authority to purchase the stocks and bonds of the Railway company and to nominally issue its refunding and extension $4\frac{1}{2}$ per cent gold bonds to the amount of \$542,000 and to acquire control of the Oklahoma company by purchase of its stock.

WYANDOTTE TERMINAL.—Authorized to Issue Stock.—The Interstate Commerce Commission has authorized this company to issue \$415,000 of common stock for the purpose of acquiring property formerly held under lease and additional property.

Railroad Administration Settlements

The United States Railroad Administration reports the following final settlements, and has paid out or received from the several roads the following amounts:

Pittsburgh, Chartiers & Youghiogheny Railway Co.....	\$328,000
Ithaca Traction Corporation	8,000
Fort Street Union Depot Company.....	19,000
Hannibal Union Depot Company.....	10,000
Leavenworth Terminal Railway & Bridge Company paid Director General	2,500

Tentative Valuations

The Interstate Commerce Commission has issued tentative valuation reports, in which it finds the final value of property owned and used as follows:

		Owned	Used
Nevada County Narrow Gauge.....	1916	\$609,270	.....
Georgia Railroad	1916	15,209,360	\$17,521,976
Akron Union Passenger Depot Company.....	1916	301,713	305,763
Mineral Point & Northern.....	1917	556,927	.....
Crittenden	1916	176,680	.....
Lexington Union Station Company.....	1917	776,498	.....

Treasury Payments to Railroads

Since last announcement, dated November 1, 1922, payments under Sections 204, 209, 210 and 212 of the Transportation Act, 1920, as amended, have been made by the Treasury as follows:

Section 204:	
Bloomington & Sullivan.....	\$15,235
Bristol Railroad	729
Chicago Tunnel Company.....	22,747
Chicago Warehouse & Terminal Company.....	64,246
Frankfort & Cincinnati.....	7,551
La Salle & Bureau County Railroad.....	13,414
Madison Southern	5,953
Moshassuck Valley	9,224
San Joaquin & Eastern.....	53,741
Sterling Mountain	48,632
Wisconsin & Northern.....	2,224

Section 209:

Asheville & Craggy Mountain.....	1,224
Carolina & Tennessee Southern.....	4,435
Central New York Southern.....	15,277
Chicago Tunnel Company.....	16,813
Chicago Warehouse & Terminal Company.....	46,806
Cincinnati, Indianapolis & Western.....	282,081
Cumberland Railroad.....	15,828
Danville & Western.....	37,549
Durham & Southern.....	70,167
Frankfort & Cincinnati.....	152
Georgia, Florida & Alabama.....	15,450
Gulf & Ship Island.....	160,970
La Salle & Bureau County.....	375
Marion & Southern.....	2,924
San Antonio, Uvalde & Gulf.....	82,718
Washington & Choctaw.....	2,202
Wisconsin & Northern.....	45,867
Yadkin Railroad.....	11,008
Section 210.....	0
Section 212.....	0
Total.....	\$1,055,542

Total payments to November 30, 1922—

(a) Under Section 204, as amended by Section 212 for reimbursement of deficits during federal control:

- (1) Final payments, including partial payments previously made..... \$4,142,914
- (2) Partial payments to carriers as to which a certificate for final payment has not been received by the Treasury from the Interstate Commerce Commission..... 1,079,502

Total payments a/c reimbursement of deficits \$5,222,416

(b) Under Section 209, as amended by Section 212 for guaranty in respect to railway operating income for first six months after federal control:

- (1) Final payments, including advances and partial payments previously made..... \$111,245,534
- (2) Advances to carriers as to which a certificate for final payments has not been received by the Treasury from the Interstate Commerce Commission..... 212,965,672
- (3) Partial payments to carriers as to which a certificate for final payment has not been received, as stated above..... 126,494,722

Total payments account of said guaranty... 450,705,928

(c) Under Section 210 for loans from the revolving fund of \$300,000,000 therein provided..... 317,886,667

Total..... \$773,815,011

Repayments of loans have been made to the amount of \$99,339,985.

Dividends Declared

Bangor & Aroostook.—Preferred, 1½ per cent, quarterly; payable January 1 to holders of record December 15.

Beech Creek.—50 cents, quarterly; payable January 2 to holders of record December 15.

Buffalo & Susquehanna.—Common, 1¼ per cent, quarterly; common (special), \$10; preferred, 2 per cent, semi-annually; all payable December 30 to holders of voting trust certificates of record December 15.

Fonda, Johnstown & Gloversville.—Preferred, 1½ per cent, quarterly; payable December 15 to holders of record December 5.

Illinois Central Leased Lines.—2 per cent, semi-annually; payable January 1 to holders of record December 11.

Lackawanna of New Jersey.—1 per cent, quarterly; payable January 2 to holders of record December 6.

Lehigh Valley.—Common, \$0.87½, quarterly; preferred, \$1.25, quarterly; both payable January 2 to holders of record December 9.

Minneapolis, St. Paul & Sault Ste. Marie.—Preferred and common, \$2; payable December 28 to holders of record December 15.

Morris & Essex.—4¼ per cent, semi-annually; payable January 1 to holders of record December 9.

New York & Harlem.—Common and preferred, \$2.50; payable January 2 to holders of record December 15.

New York, Lackawanna & Western.—\$1.25, quarterly; payable January 2 to holders of record December 14.

New York, Philadelphia & Norfolk.—\$3, payable December 31 to holders of record December 15.

Pittsburgh, Ft. Wayne & Chicago.—Common and preferred, 1¼ per cent, quarterly; payable January 2 to holders of record December 9.

Pittsburgh, McKeesport & Youghiogheny.—\$1.50, semi-annually; payable January 2 to holders of record December 15.

Rensselaer & Saratoga.—\$4, semi-annually; payable January 2 to holders of record December 14.

Rochester & Syracuse.—Preferred, \$1, quarterly; payable December 15 to holders of record December 2.

Valley Railroad.—2½ per cent, semi-annually; payable January 2 to holders of record December 16.

Trend of Railway Stock and Bond Prices

	Dec. 5	Last Week	Last Year
Average price of 20 representative railway stocks.....	64.53	64.53	60.28
Average price of 20 representative railway bonds.....	85.19	84.44	81.88

Railway Officers

Executive

W. C. Ramsay has been appointed assistant to the president of the Oklahoma, New Mexico & Pacific and general manager of the St. Louis & Hannibal, with headquarters at Hannibal, Missouri.

P. J. Neff, division engineer of the St. Louis-San Francisco, with headquarters at Ft. Worth, Tex., has been appointed assistant to the president of the International-Great Northern, with headquarters at Houston, Tex.

Robert P. Jones, whose appointment as assistant to vice-president-accounting of the Seaboard Air Line with headquarters at Baltimore, Md., was announced in the *Railway*

Age of November 11, page 917, was born on April 20, 1892, at Norfolk, Va. He attended grammar school and business college and entered railway service in 1907 as an office boy in the engineering department of the Virginian Railway. In 1909 and 1910 he was employed by the Southern Railway successively as collector, baggage-master, freight receiver and assistant cashier at Norfolk and Portsmouth, Va. In 1910 he entered the service of the Seaboard Air Line and served successively in a number of various



R. P. Jones

capacities, among which were assistant general bookkeeper, special accountant, principal assistant to the corporate comptroller (during federal control) and assistant general auditor, which last named position he assumed on March 1, 1920, and which he held until the time of his recent appointment as assistant to the vice-president. From September, 1917, to January, 1919, Mr. Jones was employed as cost accountant in the Ordnance Department, serving in the capacity of assistant supervisor and supervisor and during the latter part of his period he was in charge of the Pittsburgh district cost accounting branch.

Operating

I. P. DeWitt has been appointed superintendent of the Middletown & Unionville with headquarters at Middletown, N. Y.

J. W. Leyden has been promoted to trainmaster of the Chicago & North Western, with headquarters at Madison, Wis., succeeding L. Jutton, resigned to engage in other business.

J. L. Kendall, superintendent of the Memphis division of the Missouri Pacific, with headquarters at Wynne, Ark., has been transferred to the Missouri division, with headquarters at Poplar Bluff, Mo., and **A. A. Miller**, superintendent of the Missouri division, has been transferred to the Memphis division.

J. C. Goodfellow, terminal trainmaster of the Southern Pacific with headquarters at Los Angeles, Cal., has been transferred to the Tucson division, with headquarters at Yuma, Ariz. **J. J. Sullivan**, trainmaster of the Tucson division, has been transferred to terminal trainmaster at Los Angeles, succeeding Mr. Goodfellow.

W. R. Davidson, general superintendent of Western lines of the Grand Trunk, with headquarters at Chicago, has been transferred to the Eastern lines, with headquarters at Montreal, Que., succeeding **R. H. Fish**, who has been transferred to the Ontario lines, with headquarters at Toronto, Ont. Mr. Fish succeeds **C. G. Bowker**, whose promotion to operating manager of Lines East of the Detroit and St. Clair rivers was reported in the *Railway Age* of October 21, page 775. **J. A. Clancey**, superintendent of transportation at Chicago, has been transferred with the entire operating department of the Western lines in the United States to Detroit, Mich.

L. B. Allen, whose retirement as general manager of Eastern lines of the Chicago, Burlington & Quincy, with headquarters at Chicago, was reported in the *Railway Age*



L. B. Allen

of December 2, entered railway service in 1885, as a messenger boy on the Chicago, Milwaukee & St. Paul at Austin, Minn. From 1886 to 1889 he served the same road as station clerk and clerk to the master car builder at Minneapolis, Minn. He was promoted to yard clerk and secretary to the superintendent of the Minneapolis Transfer Railway in 1889 and held this position until 1893, when he entered the transportation department of the Great Northern with headquarters at St. Paul, Minn. He was promoted to secretary to the general superintendent in 1896, and on November 15, 1898, was again promoted to assistant superintendent of the Fergus Falls division with headquarters at St. Cloud, Minn. He was promoted to superintendent of the Willmar division with headquarters at Willmar, Minn., on September 1, 1899, and was transferred to the Dakota division with headquarters at Larimore, N. D., on October 1, 1902. A year later he was appointed superintendent of the Cedar Rapids division of the Chicago, Rock Island & Pacific, with headquarters at Cedar Rapids, Ia., and on February 15, 1904, he was transferred to the Illinois division, with headquarters at Rock Island, Ill. On February 1, 1906, he was appointed superintendent of the Ottumwa division of the Chicago, Burlington & Quincy at Ottumwa, Ia. He was promoted to general superintendent of the Wyoming district, with headquarters at Alliance, Neb., on July 25, 1906, and he held this position until May 15, 1909, when he was transferred to the Iowa district with headquarters at Burlington, Ia. On September 1, 1910, he was again transferred to the Nebraska district with headquarters at Lincoln, Neb., and on June 1, 1915, was promoted to assistant general manager of Lines East with headquarters at Chicago. He was promoted to general manager of Lines East on September 1, 1907, and held this position until his recent retirement from service.

S. E. Miller, superintendent of transportation of the Boston & Maine, has been appointed superintendent of the Southern division, succeeding **H. C. Robinson**, retired. **W. H. Towne**, assistant superintendent of transportation, has been appointed superintendent of transportation. Mr. Robinson retires after 52 years of service. He has served consecutively as freight clerk, clerk to superintendent, passenger conductor, train dispatcher, chief dispatcher, assistant superintendent and superintendent. Mr. Miller entered the service of the Boston & Maine at Beverly, Mass., in 1899 as an operator. He has served the company in that capacity and as ticket agent, clerk and inspector of freight transportation.

H. Hulatt, manager of telegraph of the Grand Trunk, with headquarters at Montreal, Que., has resigned to accept an executive position with the Alexander Hamilton Institute. Mr.

Hulatt was born on February 15, 1883, in London, England, and entered railway service in 1907 in the stores department of the Canadian Northern. In March, 1908, he was appointed private secretary to the manager of telegraph of the Grand Trunk Pacific at Winnipeg, Man., and in October, 1910, was promoted to chief assistant in the same office. He was promoted to superintendent of telegraph of the lines west of Fort William, Ont., in January, 1913, and served in this capacity until October, 1915, when he was promoted to manager of telegraph at Montreal, Que., which position he held at the time of his recent resignation.

H. D. Brown, whose promotion to superintendent of transportation of the Chicago, Burlington & Quincy, with headquarters at Chicago, Ill., was reported in the *Railway Age* of December 2, was born on May 10, 1882, at Atchison, Kan. He entered railway service as a call boy on the Chicago, Burlington & Quincy at St. Joseph, Mo., on March 1, 1898. Shortly after, he was promoted to yard clerk and subsequently to chief yard clerk with the same headquarters. He was a freight brakeman on the St. Joseph division for a short time and was then employed as a clerk in the office of the trainmaster. Later he was promoted to chief clerk in the office of the superintendent at St. Joseph, and served in this capacity until his promotion to assistant chief clerk to the general manager with headquarters at Omaha, Neb. He was promoted to trainmaster with the same headquarters on December 1, 1916. During the period of federal control he was a transportation inspector on the staff of the regional director of the Central Western region with headquarters at Chicago. He was promoted to transportation assistant to the regional director on November 1, 1919, and held this position until the end of federal control when he was appointed assistant superintendent of the McCook division with headquarters at Denver, Colo. He held this position until his recent promotion to superintendent of transportation at Chicago.

Financial, Legal and Accounting

Henry Wolf Bicklé, whose appointment as general attorney of the Pennsylvania was announced in the *Railway Age* of November 25, page 1023, was born at Gettysburg, Pa., on



H. W. Bicklé

October 20, 1877. He attended Gettysburg College, from which institution he received the degree of bachelor of arts in 1897 and of master of arts in 1900. In 1901 he received the degree of bachelor of laws from the University of Pennsylvania. Mr. Bicklé entered the service of the Pennsylvania Railroad in 1907 as assistant general solicitor and held that position until July 1, 1916, when he was advanced to assistant general counsel. This latter position he held continuously until the time of his recent promotion except that during federal control he acted as assistant general solicitor of the Pennsylvania, Lines East, and as legal adviser to the traffic assistant for the Allegheny region, U. S. R. A. In addition to his connection with the Pennsylvania Railroad, Mr. Bicklé has served on the faculty of the Law School of the University of Pennsylvania in the following capacities: from 1901 to 1908, lecturer in law; 1908 to 1913, assistant professor; and 1913 to date, professor of law. In this latter capacity Mr. Bicklé is still serving, his courses being Constitutional Law and Law of Carriers.

W. R. Durland has been appointed auditor of the Middletown & Unionville with headquarters at Middletown, N. Y., succeeding **I. P. DeWitt**, appointed superintendent.

Traffic

H. Allen, division freight agent of the Missouri, Kansas & Texas, with headquarters at Tulsa, Okla., has been promoted to assistant general freight agent, with headquarters at St. Louis, Mo.

L. F. Kemper, general agent of the Louisville & Nashville, with headquarters at Pittsburgh, Pa., has been transferred to Cincinnati, Ohio, succeeding **E. T. Arnold**, deceased. **E. L. Blandford** has been appointed general agent, with headquarters at Pittsburgh, succeeding **L. F. Kemper**.

R. C. Kerr, local freight agent of the Chicago & North Western at Milwaukee, Wis., has been promoted to general agent of the freight department in the same city, succeeding **C. Thompson**, deceased. **E. P. Rueter**, city passenger agent at Milwaukee, has been promoted to general agent of the passenger department with the same headquarters, also succeeding **Mr. Thompson**, who served as general agent of both freight and passenger departments.

Edwin N. Todd, whose appointment as freight traffic manager of the Canadian Pacific was announced in the *Railway Age* of November 18, page 965, was born at Huntingdon, Que., on October 17, 1879, and was educated at Huntingdon Academy and Montreal Business College. He entered railway service in May, 1896, as a junior clerk and stenographer in the foreign freight department at Montreal. In 1898 he was advanced to import clerk and served in that capacity at Montreal and at West St. John. In June, 1903, he became a contracting clerk in the office of the assistant freight traffic manager at Toronto. In May of the following year he was advanced to contracting freight agent in the foreign freight department at Toronto. He was promoted to assistant export and import freight agent with the same headquarters in May, 1905, and remained in that position until January, 1909, when he became export freight agent at Montreal. In September, 1911, he was appointed division freight agent at Montreal and, in September, 1915, was advanced to general freight agent. He was appointed general foreign freight agent in March, 1919, and served in that capacity until the time of his recent promotion to freight traffic manager.



E. N. Todd

E. M. Kain, general agent of the Erie, with headquarters at Buffalo, N. Y., has been appointed general freight agent, with the same headquarters. **W. R. Dusenbark**, general agent, with headquarters at Akron, Ohio, has had his jurisdiction extended over freight traffic in the Chicago region between Kent, Ohio, and Mansfield. **A. R. Tennis**, division freight agent, with headquarters at Marion, Ohio, has been assigned to the district from Mansfield, Ohio, to Kings Creek. **J. H. Hackett**, division freight agent, with headquarters at Huntington, Ind., has been assigned to the territory between Espyville, Ohio, and Saxony, Ind. **E. J. Brattain**, division freight agent, with headquarters at Dayton, Ohio, has been assigned to the territory between Urbana, Ohio, and Dayton. **L. Enos**, division passenger agent, with headquarters at Mansfield, Ohio, has been assigned to the territory between Kent, Ohio, and Dayton. **L. B. Smith**, division passenger agent, with headquarters at Huntington, Ind., has been assigned to the territory between Hammond, Ind., and Marion, Ohio. **M. P. O'Brien**, milk and live stock agent, with headquarters at Chicago, has been assigned to the territory between Chicago and Kent, Ohio, and between Marion, Ohio, and Dayton.

Mechanical

G. T. DePue, mechanical superintendent of the Ohio region of the Erie, with headquarters at Youngstown, Ohio, has been transferred to the Chicago region, with headquarters at Chicago, Ill.

D. Davis, assistant master mechanic of the Lehigh Valley with headquarters at Easton, Pa., has been promoted to master mechanic with headquarters at Coxtown, Pa., succeeding **W. B. Woolever**, resigned.

W. S. Tasker, general foreman of shops on the Atchison, Topeka & Santa Fe at Clovis, N. M., has been promoted to master mechanic of the Panhandle division, with headquarters at Wellington, Kan., succeeding **A. Dinan**, who has retired on pension.

Engineering, Maintenance of Way and Signaling

F. G. Jonah, chief engineer of the St. Louis-San Francisco, with headquarters at St. Louis, Mo., has been appointed assistant to the president and chief engineer in charge of engineering, maintenance and construction, with the same headquarters.

F. G. Swofford, trainmaster of the New York Central, with headquarters at Gibson, Lake County, Ind., has been appointed superintendent of telegraph on the Indiana Harbor Belt Railway and assistant superintendent of telegraph on the Illinois division of the New York Central, succeeding **W. L. Connelly**, deceased.

Special

Edgar J. McClees, secretary of the Bureau of Information of Eastern Railways, has been appointed secretary in charge of the bureau, succeeding **J. G. Walber**. **Mr. McClees** was born on March 31, 1875, at Philadelphia, Pa., and attended public school in that state. He entered railway service on September 15, 1890, as telegraph operator and extra agent on the Philadelphia division of the Pennsylvania Railroad. In 1897 he was transferred to telegraph operator in the office of the superintendent at Philadelphia and in 1904 was advanced in the same capacity to the general office of the company. In 1910 he was appointed clerk on wage matters in the office of the superintendent of telegraph, the superintendent of telegraph being at that time chairman of the general managers' labor board. In 1912 he was assigned to special duties with the Conference Committee of Managers of Eastern Railroads and in 1914 was advanced to chief clerk of the Bureau of Information of Eastern Railways. In 1918 he was appointed assistant secretary of the bureau and served also as chief of the wage bureau of the Eastern Region of the Railroad Administration. In 1921 he became secretary of the Bureau of Information of Eastern Railways and held that position until his advancement to the position of secretary in charge.



E. J. McClees

Obituary

E. C. Arnold, general agent of the Louisville & Nashville, with headquarters at Cincinnati, Ohio, died on November 24.

W. Queenan, assistant superintendent of shops of the Chicago, Burlington & Quincy with headquarters at Aurora, Ill., died November 28 after a short illness.